



Prosodic Noun Incorporation and Verb-Initial Syntax

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Prosodic Noun Incorporation and Verb-Initial Syntax

Abstract

To date, no real consensus has emerged among syntacticians about how to derive verb-initial order (V1); but the two main approaches, V^0 -raising and VP-raising, receive particularly widespread support in the literature. The syntax of Niuean pseudo noun incorporation (PNI) has played an important role in the propagation of the VP-raising analysis (Massam 2001), especially for VSO languages and languages with a VSO option.

In this thesis, I present an analysis of the prosody of Niuean PNI and show that the PNI verb and incorporated argument form a prosodic constituent. While this result is consistent with the syntactic analysis of Massam (2001), it is also consistent with a prosodic restructuring analysis that explains the VOS order of PNI by appealing to prosodic well-formedness. I take the second approach. Specifically, the principle behind Selkirk's (1984) *Sense Unit Condition* requires that the verb and its internal argument(s) form a unique phonological phrase. In order to satisfy this requirement, the incorporated argument moves into a position adjacent to the verb at PF. Positionally motivated categorical feature sharing (Adger and Svenonius 2011; Pesetsky and Torrego 2007) allows PF to reference the head-argument relationship between the verb and its internal argument, even though they are not sent to PF in structurally adjacent positions.

The main result for the syntactic analysis of Niuean is that V^0 -raising replaces VP-raising. The benefits of the V^0 -raising approach include i) less phonologically vacuous structure in places where Niuean has overt morphology, e.g., a perpetually null T^0 in the face of overt tense markers; and ii) observance of the idea that thematic roles are correlated to structural positions. Thus, the prosodic analysis of Niuean PNI has a number of positive outcomes for Niuean syntax, as well as the potential to simplify the derivation of VSO cross-linguistically.

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Glossary of abbreviations

1	first person	ITT	itterative
2	second person	ITV	intransitive
3	third person	LK	linker
φ -phrase	phonological phrase	LOC	locative
ι -phrase	intonational phrase	MAN	manner
ω	prosodic word	NAV	non-actor voice
ABS	absolutive	NEG	negation
ANIM	animate	NOM	nominative
ANTIP	antipassive	NSP	nonspecific
APPL	applicative	OBJ	object
AV	actor voice	OBL	oblique
BEN	benefactive	OBV	obviative
CAUS	causative	PASS	passive
CL	classifier	PERF	perfect
COM	completive	PERS	person
COMTV	comitative	PFV	perfective
DEF	definite	PL	plural
DEM	demonstrative	POSS	possessive
DEP	dependent	PRED	predicate
DES	desiderative	PROG	progressive
DET	determiner	PRS	present
DIR	directional	PRT	particle
DIS	distal	PST	past
DU	dual	Q	question
EMPH	emphatic	REDUP	reduplication
ERG	ergative	REL	relative
EX	exclusive	RN	relational noun
FOC	focus	RP	resumptive pronoun
FUT	future	SBJ	subjunctive
GEN	genitive	SG	singular
GL	goal	SS	status suffix
HAB	habitual	SUB	subject
HON	honary	T	tense
INC	inclusive	T/A	tense/aspect
INCOM	incompletive	TAM	tense-aspect-mood
INDEF	indefinite	TV	transitive
INTERR	interrogative		

Chapter 1

Introduction to the thesis

This thesis develops a new analysis of a construction in Niuean (Austronesian) known as pseudo noun incorporation (PNI). The standard account derives both VSO constructions (1) and PNI constructions (2)) via VP-raising; in the VSO case, however, the object evacuates the VP before the VP fronts (Massam 2000, 2001, et seq.)

(1) Niuean VSO

Kua [_{VP} fakahū *t_i*] he ekekafo **e** **tohi**_{*i*}.
pfv send ERG doctor ABS letter
'The doctor sent the letter.'

(2) Niuean PNI

Kua [_{VP} fakahū **tohi**] e ekekafo.
pfv send letter ABS doctor
'The doctor sent the letter.'

By contrast, the account developed in this thesis derives both VSO and PNI clauses via V^0 -raising, and introduces a high-ranking constraint on prosodic well-formedness that requires the verb and the object to be parsed into a common phonological phrase. This constraint correctly derives the VOS order of PNI clauses.

Prosodic data from VSO and PNI clauses plays an important part in this thesis. The prosody of Niuean PNI and VSO is schematized in (3) and (4).

(3) VSO prosody

(Kua fakahū) φ (he ekekafo) φ (e **tohi**_i) φ
pfv send ERG doctor ABS letter
'The doctor sent the letter.'

(4) PNI prosody

(Kua fakahū **tohi**) φ (e ekekafo) φ
pfv send letter ABS doctor
'The doctor sent the letter.'

The prosody is consistent with both theories; however, I will argue extensively below that the account developed in this thesis is preferable for two reasons: first, it offers a more streamlined approach to Niuean clause structure, and second, it has the potential to reduce the number of ways in which VSO languages are derived cross-linguistically.

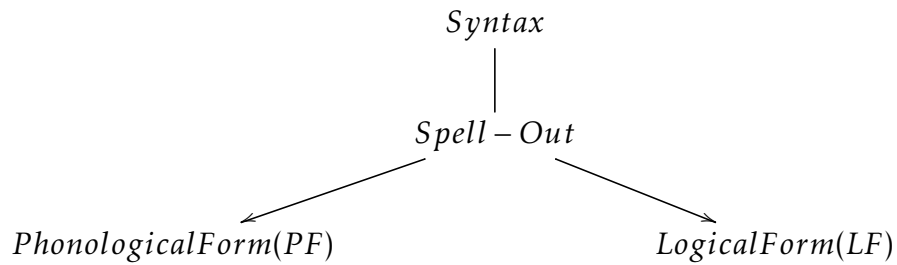
1.1 Theoretical orientation

This thesis addresses three problems connected to both syntax and phonology: i) the transfer of syntactic information to PF (i.e., spell-out to PF); ii) the relationship between syntactic and prosodic constituency; and iii) the relationship between syntactic structure and linearization. Each of these problems is introduced below.

1.1.1 Spell-out to PF

This thesis assumes a Y-Model of the grammar (Chomsky and Lasnik 1977; Chomsky 1995), in which syntactic information is sent to the PF and LF branches of the grammar at every spell-out juncture (5).

(5) Y-Model of the grammar (Chomsky 1995)



According to Embick and Noyer (2001)'s Model of the PF Branch of the Grammar, the following phenomena occur after spell-out: i) lowering, ii) vocabulary insertion, iii) local dislocation, and iv) prosodic domain building. Although head movement has also been construed as a PF operation (see, e.g., Matushansky 2006), and Chapter 5 provides a head movement account of Niuean clause structure, I remain agnostic as to whether head movement belongs in the domain of narrow syntax or PF. With regard to PF phenomena, this thesis focuses on the building of prosodic domains.

Prosodic domain building

The literature is inconsistent on the question of the derivational stage at which prosodic structure is assigned. Two main analyses have been advanced. The first holds that phonological rules apply to syntactic structure directly; the second contends that syntactic structure is converted into phonological constituents before phonological rules apply. The first approach is known as Direct Reference Theory, and its advocates include Kaisse (1985), Odden (1990; et seq.), Wagner (2005; et seq.), and Samuels (2009), as well as Seidl (2001) and Pak (2008), who propose mixed theories of direct and indirect reference. One argument in favor of Direct Reference Theory is the finding that prosodic structure contains more recursive structure than previously thought (see, e.g., Wagner 2005, et seq.; Féry and Schubö 2010; Itô and Mester 2007, 2010, 2012; Ladd 2008).

The second approach, known as Indirect Reference Theory, is supported by (i) instances of non-isomorphism between syntactic and prosodic structure, and (ii) the ob-

servation that non-syntactic factors contribute to the building of prosodic constituents. Indirect reference theories include, but are not limited to, Selkirk (1978; et seq.), Nespor and Vogel (1986), Beckman and Pierrehumbert (1986), Zec and Inkelas (1990), Truckenbrodt (1995; et seq.), Ladd (2008), and Gussenhoven (2004). The results of this thesis are presented within the framework of Match Theory (Selkirk 2011), an indirect reference theory of the syntax-prosody interface, which is introduced in Section 1.1.2.

Cyclic prosodic domain building

This thesis adopts an incremental approach to the assignment of prosodic structure, which is fed by a cyclic transfer of syntactic information to the interfaces (see, e.g., Uriagereka 1999, Chomsky 2000, 2001). Many researchers have adopted the idea, commonly referred to as Multiple Spell-Out (from Uriagereka 1999), that syntactic information is transferred incrementally. Yet, there remains a conspicuous lack of consensus regarding i) what constitutes a spell-out domain, commonly referred to as a phase (Chomsky 2000, 2001), and ii) what triggers the transfer of a phase to the interfaces.

Researchers agree that C^0 and transitive/unergative v^0 are phase heads, but there is substantial debate on the status of passive/unaccusative v^0 (e.g., Legate 2003 and Richards 2004, et seq.). D^0 is argued to introduce a phase by Svenonius (2004) and Hiraiwa (2005); and the literature is also inconsistent on the status of P^0 . Next, there are differing opinions as to whether the phase head's complement is sent to the interfaces alone (e.g. Chomsky 2000, 2001) or with the phase head (e.g., Svenonius 2004). Finally, there are two competing perspectives on the timing of spell-out. The first maintains that the spell-out domain is transferred to the interfaces when its phase head is introduced (e.g., Chomsky 2000); the second holds that it is transferred with the introduction of the *next* phase head (e.g., Chomsky 2001; Richards 2004, et seq.; Embick 2010; Asarina and Hartman to appear).

Phase-based syntax created a research agenda that the prosodic community responded

to. For example, Kahnemuyipour (2004, 2009) and Kratzer and Selkirk (2007) argue that the phase constitutes a domain for stress assignment. Other notable phase-based approaches to prosody include Dobashi (2003), Ishihara (2003, 2007), Pak (2007, 2008), and Elfner (2012). Chapter 4 argues that cyclic prosodic structure assignment explains why Niuean PNI occurs with NPs, but not DPs. Specifically, the parsing of syntactic objects into prosodic structure renders them invisible to the computation of the next phase of prosodic structure.

1.1.2 Prosodic constituency

The results of this thesis are presented within the framework of Match Theory (Selkirk 2011). Match Theory posits a series of violable input-output correspondence constraints (McCarthy and Prince 1995) that call for isomorphism between syntactic and prosodic constituents:

(6) a. Match (α , π)

The left and right edges of a constituent of type α in the input syntactic representation must correspond to the left and right edges of a constituent of type π in the output phonological representation.

b. Match (π , α)

The left and right edges of a constituent of type π in the output phonological representation must correspond to the left and right edges of a constituent of type α in the input syntactic representation (Selkirk 2011: 20)

Where α in (6) is a syntactic head (X^0), π is a prosodic word (ω); where α is a syntactic phrase (XP), π is a phonological phrase (φ); and where α is a clause with illocutionary force (TP/CP), π is an intonational phrase (ι).

Match Theory preserves the long-standing tradition that prosodic constituents are hierarchically organized (Selkirk 1978, 1986; Nespor and Vogel 1986; Inkelas and Zec 1990;

among others); however, because there is a many-to-one correspondence between syntactic and prosodic constituents, e.g., $VP \rightarrow \varphi$ -phrase; $vP \rightarrow \varphi$ -phrase; $AspP \rightarrow \varphi$ -phrase, and because syntactic structure is recursive, Match Theory necessarily breaks with the traditional analysis of prosodic structure as non-recursive (Selkirk 1981, 1986; Nespor and Vogel 1982, 1986; Pierrehumbert and Beckman 1988, Inkelas and Zec 1990; Vogel 2009; among others). This break with tradition is a positive development for prosodic theory; recent evidence strongly indicates the existence of recursive prosodic structure (e.g., Wagner 2005, et seq.; Krivokapić 2007; Ladd 2008; Féry and Schubö 2010; Itô and Mester 2007, 2010, 2012; Selkirk 2011).

Chapter 3 presents an investigation into the prosody of Niuean pseudo noun incorporation (PNI) that capitalizes on the notion of recursive prosodic structure. According to one finding, pauses occur freely after VSO verbs in Niuean, but can only follow a PNI verb when that verb is followed by a modified incorporated argument. In order to account for the distribution of pauses in the data, a distinction is drawn between minimal and non-minimal (i.e. recursive) projections (Elfner 2012, Itô and Mester 2010).

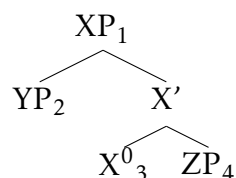
Non-isomorphism

As illustrated above, Match Constraints call for isomorphism between syntactic and prosodic structure. In practice, however, this isomorphism need not always materialize; since Match Theory is set in the context of Optimality Theory (Prince and Smolensky 1993/2004), Match Constraints are violable. This violability gives rise to non-isomorphism between syntactic and prosodic structure in situations where prosodic well-formedness constraints outrank isomorphic faithfulness constraints.

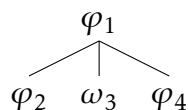
For example, whereas Match Theory predicts ternary prosodic branching when the specifier of a phrase is occupied, many languages avoid this output, opting for exclusively binary prosodic branching (see e.g., Inkelas and Zec 1990; Ito and Mester 2007; Mester 1994; Selkirk 2000; Bennett et al. to appear a, b; Elfner 2012). Other languages

prefer binary prosodic structures that have matching subcomponents, e.g. two φ -phrases instead of one φ -phrase and one prosodic word. This later constraint is sometimes referred to as EQUAL SISTERS (Myrberg 2010, 2013; Bennett et al. to appear a). Thus, a single syntactic input such as (7a) can result in a number of different prosodic outputs, as in (7b-d), although we do not know *why* languages vary with respect to these properties.

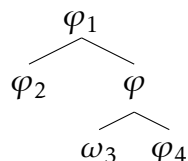
(7) a. Syntactic input



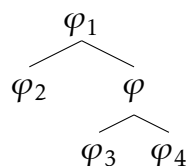
b. Conforms to Match Theory



c. Conforms to BINARITY



d. Conforms to EQUAL SISTERS



These examples serve to illustrate the violability of Match Constraints, as well as to underscore the fact that a single syntactic input can result in different prosodic outputs. Consequently, a particular prosodic structure need not necessarily reveal its underlying syntactic structure. Prosody can be a reliable diagnostic of syntactic structure only when other constraints on prosodic well-formedness are taken into account. For most

languages, there is too little prosodic information available to establish accurate syntactic diagnostics. This thesis takes the perspective that direct work on the syntax-prosody interface of a particular language is best conducted in concert with work on the prosody of that language.

Based on the prosodic study presented in Chapter 3, Chapter 4 proposes a constraint on the formation of prosodic structure, ARGUMENT- φ , that brings about syntax-prosody non-isomorphism in cases where the verb and its argument(s) are not adjacent at spell-out. Unlike the Binarity and Equal Sister constraints, illustrated above, ARGUMENT- φ is not phonological in nature, per se. Instead, in the spirit of Selkirk's (1984) *Sense Unit Condition*, ARGUMENT- φ aims to align prosodic structure and argument structure by mandating that syntactic constituents in a head-argument relationship be parsed into a common φ -phrase. When the verb and its argument(s) are not adjacent at spell-out, prosodic restructuring ensures that they are pronounced in a common φ -phrase. All types of prosodic restructuring, including phonologically motivated restructuring, violate Match Constraints.

1.1.3 Linearization

The traditional view of linearization holds that, by the end of the syntactic derivation, all major sentential constituents must be arranged in the order in which they will ultimately surface. Analyses in this vein generally assume that PF factors cannot reorder constituents after narrow syntax. Both parameterized and antisymmetric approaches to phrase structure generally assume the traditional view of linearization. Parameterized approaches originated with Stowell's (1981) Head Parameter, which maintains that the order of a head and its complement varies cross-linguistically. The Head Parameter can account for cross-linguistic differences with respect to the relative order of the verb and its object (OV vs. VO languages). As discussed in Chapter 2, the notion of parametric variability in head-complement order has been extended to head-specifier order as a way

of base-generating VOS structures.

However, more recently, many researchers have moved away from parameterization to a universalist view of linearization informed primarily by Antisymmetry and the Linear Correspondence Axiom (Kayne 1994). Kayne's approach restricts phrase structure in such a way that heads always precede their complements and specifiers are always projected to the left. Consequently, movement plays a crucial role in deriving non-SVO orders in antisymmetric accounts. The V^0 - and VP-raising approaches to V1 order, discussed in Chapters 2 and 5, base-generate SVO and derive V1 via X^0 - and XP-movement, respectively.

In an effort to simplify movement in linguistic theory, Koopman and Szabolcsi (2000), Mahajan (2003a, 2003b), and Nilsen (2003) reexamine cases of purported X^0 -movement and argue that XP-remnant movement often produces similar results (cf. Matushansky 2006). In Chapter 5, I demonstrate that X^0 - and XP(-remnant) movement do not offer equivalent accounts of Niuean phrase structure; I will show that, on balance, the X^0 -movement analysis is favorable for both theoretical and empirical reasons.

Linearization and PF

Opposing the traditional view of linearization is the view that the order of major sentential constituents is established post-syntactically. Reinhart (1976, 1979) was among the first to argue that linearization is non-syntactic; her position is based on the observation that hierarchical organization, not linearization, is necessary to account for syntactic phenomena. In the majority of post-syntactic approaches to linearization, sister nodes are unordered until PF (see, e.g., Chomsky 1995 and Fox and Pesetsky 2005).

Different phonological factors, including length or weight (Inkelas and Zec 1990; McDonald et al. 1993; Zubizarreta 1998; Anttila et al. 2010; Shih 2014; among others), stress (Arregi 2002; Zubizarreta 1998), and onset-relatedness (Jannsen and Caramazza 2009) also influence constituent order. As such, it seems likely that at least a subset of

the factors that determine linear order are post-syntactic, unless the syntactic grammar is sensitive to phonological considerations (see e.g., Richards 2014). The attraction of longer/heavier constituents to final positions in European languages, including English, represents a particularly well-studied case of phonological features affecting linearization. Such effects are generally attributed to the optimization of prosodic structure (see, e.g., Inkelas and Zec 1990; Zubizarreta 1998; Anttila et al. 2010; cf. Wasow 2002).

Chapter 2 discusses two other constraints on prosodic well-formedness that are said to trigger displacement: **STRONG START** (Werle 2009; Selkirk 2011; Elfner 2012; Bennett et al. to appear a,b) and **WEAK START** (Sabbagh 2014). Chapter 4 proposes a constraint on prosodic well-formedness, **ARGUMENT- φ** , that affects the linearization of the clause when the verb and its internal arguments are separated in the syntax, e.g. via X^0 -movement. **ARGUMENT- φ** fits into a category of non-phonological constraints on prosodic well-formedness that includes **MATCH Constraints** (Selkirk 2011), discussed above, and **DISTINCTNESS** (Richards 2010), which prevents like constituents (e.g., two DPs, as opposed to a DP and an NP) from surfacing in adjacent positions.

1.2 Overview of the thesis

1.2.1 Verb-initial languages

Chapter 2 surveys different approaches to the syntax of verb-initial (V1) languages and introduces the major themes in the V1 literature with a particular emphasis on Austronesian and Mayan V1 languages.¹ Austronesian and Mayan languages have received the most attention in the V1 literature, because these families share a number of typological similarities in addition to word order, including extraction asymmetries, a high occurrence of ergativity, and weakly encoded lexical class distinctions.

¹A version of this chapter will appear in *The Blackwell Companion to Syntax*, 2nd ed. as Clemens and Polinsky, “Verb-Initial Word Orders (Primarily in Austronesian and Mayan Languages).”

While many V1 languages share certain common characteristics, they are not a homogenous group. For example, there is variation among V1 languages with respect to A'-extraction patterns, the structure of non-verbal predicates, and the factors that condition common word order alternations (VSO, VOS, and SVO). Differences in these and other areas have led researchers to propose a rather broad range of syntactic analyses of V1. This chapter addresses the empirical and theoretical strengths and weaknesses of the different approaches, which include VP-raising, V⁰-raising, specifier parameterization, non-configurationality, ternary-branching VP, and subject lowering.

The two primary approaches to the derivation of V1 involve VP- and V⁰-raising. VP-raising in coordination with VP-remnant raising provides a uniform account of V1 in languages with both VSO and VOS orders; however, VP-(remnant) raising works best for strictly or predominantly VOS languages, because, for most languages, multiple factors condition postverbal word order variation (OS/SO), making the motivation of object evacuation difficult in many cases. Almost the opposite can be said for V⁰-raising, where postverbal word order variation is not connected to the mechanism that derives V1. Thus, while postverbal word order needs to be addressed in some other way, e.g., via scrambling, the flexibility of this approach allows for greater empirical coverage.

Chapter 2 also addresses a number of recent proposals that offer prosodic explanations for verb-initiality and postverbal word order variation in V1 languages. For example, Richards (2014) provides a novel explanation for why some languages are V1—or, more accurately, for why more languages are not V1—with a prosodic constraint on affixes. Sabbagh (2014) finds motivation for the subject-lowering approach to V1 in the building of optimal prosodic constituents. Finally, Bennett et al. (to appear a, b) offer a prosodic account of object postposing in Irish. Together, these proposals challenge the exclusivity of syntax in determining constituent order by arguing that prosodic domain building also contributes to linearization.

While previous literature has addressed the issue of V1 clauses in generative syntax

(e.g., Carnie and Guilfoyle 2000; Carnie et al. 2005; Chung 2005, 2006), the present discussion brings two new perspectives to the topic. First, earlier overviews have focused primarily on data from the Celtic and Austronesian families; Chapter 2 of this dissertation includes a more comprehensive discussion of the Mayan literature and assesses the strengths and weaknesses of different approaches to V1 from a wider cross-linguistic perspective. This chapter also discusses the recent trend of seeking solutions to standing problems in word order variation at the syntax-phonology interface. The potential benefits of this research agenda are considerable, but they cannot be realized without a nuanced understanding of the prosodic systems of individual languages—an understanding which, due to a lack of data, is often missing.

1.2.2 The prosody of Niuean PNI

Chapter 3 presents a study, the first of its kind, of sentence-level prosody in Niuean.² The data analyzed in this chapter were gathered in a controlled reading-based study of five Niuean speakers living in New Zealand. The experimental materials crossed three factors: i) clause structure (PNI vs. VSO); ii) argument type (absolutive vs. middle vs. instrumental); and iii) argument complexity (modified vs. unmodified). Complex arguments were modified by either an adjectival phrase or a conjoined phrase. The primary findings of the study pertain to i) the intonational patterns of phonological phrases (φ -phrases); ii) the phrasing of tense-aspect-mood markers (TAM); and iii) the prosodic profile of three types of PNI clauses.

Niuean clauses are produced with a series of H*L- tunes, which are shown to correlate with φ -phrases. The H* for each φ -phrase is located on the rightmost prosodic word (PWd) of the phrase. H* tones are anchored to stressed syllables; stress is found on the penultimate syllable of most words and the final syllable of words that end with a long

²A version of this chapter will appear in the Proceedings of the 44th Meeting of the New England Linguistic Society, as “The Prosody of Niuean Pseudo Noun Incorporation: A Recursion-Based Analysis.”

vowel or a diphthong (see also Rolle and Starks to appear). Thus, a H* tone can serve as a diagnostic for the right edge of Niuean φ -phrases. This is similar to the findings reported in de Lacy (2003) for Māori and Vicenik and Kuo (2010) for Tongan.

A second tool for the diagnostic of Niuean φ -phrases is also identified in this chapter. The left edge of some φ -phrases in the data is optionally marked with a pause. Specifically, a pause optionally precedes subjects in VSO clauses and modified incorporated argument in PNI clauses, but never precedes unmodified incorporated arguments. An analysis based on prosodic recursion is applied to the distribution of pauses in the data: pauses are said to optionally mark the left edge of non-minimal φ -phrases.

Next, it is observed that tense-aspect-mood (TAM) markers, as non-stress-bearing elements, form a prosodic word with the verb. The implications of this finding challenge the account provided in Massam (2009b), where a proclisis analysis is rejected. In contrast, the fact that TAM forms a prosodic word with the verb is consistent with a head movement analysis of TAM. Such an analysis is presented in Chapter 5 of this thesis.

The primary contribution Chapter 3 is to provide a prosodic description of Niuean PNI constructions that incorporate either absolutive, middle, or instrumental objects. For each of these three types of PNI constructions, the verb and the incorporated argument form a prosodic constituent of the sort that is delimited by a H*L- tune. Evidence supporting this claim comes from a comparison of phrase-final lengthening and pitch maxima in PNI and VSO clauses.

Finally, this chapter serves to illustrate how different syntactic analyses can be evaluated with respect to prosodic data both in principle and within the specific framework of Match Theory (Selkirk 2011). The prosodic profile of Niuean PNI is compared to the predictions of the syntactic analysis of PNI (Massam 2000, 2001). The chapter concludes with the observation that the prosody of PNI is consistent with Massam (2000, 2001), but would also be consistent with an account that motivates PNI on prosodic grounds.

1.2.3 A prosodic account of VOS

In Chapter 4, I present an account of Niuean PNI in which the verb and the incorporated argument surface in a VOS configuration for prosodic reasons. Building on the finding from Chapter 3 that the verb and the incorporated argument in PNI constructions form a unique φ -phrase, I argue that the movement of the verb into initial position is syntactic, but that the position of the object is prosodically motivated and hence post-syntactic. In other words, the syntactic input to the prosodic grammar is VSO, while the prosodic output is VOS. This account differs from the traditional approach to PNI, in which both the verb and the incorporated argument move into clause-initial position in the syntax (Massam 2000, 2001).

This chapter introduces the constraint ARGUMENT- φ , a condition on prosodic well-formedness, and uses this constraint to motivate the post-syntactic shifting of the object. ARGUMENT- φ is based on Selkirk's (1984) *Sense Unit Condition*, a semantic constraint on the structure of prosodic phrases that seeks to explain why head-argument pairs are commonly phrased together. Despite the fact that the *Sense Unit Condition* has virtually disappeared from the prosodic literature, related proposals are found in many different places. The constraints WRAP-XP (Truckenbrodt 1995, 1999, 2007) and *Selectional Contiguity* (Richards 2014) perform a similar function to the *Sense Unit Condition*, as do various proposed conditions on the phrasing of clitics and other functional heads (e.g. Henderson 2012 and Werle 2004).

Steedman (1991) argues that Selkirk's condition is unnecessary, because the prosodic grammar can rely on syntactic constituency to produce the same results. In the context of Match Theory, MATCH (XP, φ) is the only constraint needed to ensure that the verb and its object are phrased together, provided that they are both VP-internal at the end of the syntactic derivation. However, in a head movement account of Niuean V1 (see Chapter 5), the verb and the object are not adjacent at the end of the syntactic derivation. As such, the head-argument relationship between the verb and the object cannot be gleaned

from syntactic constituency. Therefore, an independent constraint like ARGUMENT- φ is warranted.

In my account of Niuean VOS, ARGUMENT- φ motivates the movement of the object to the verb at PF, and MATCH- ι (Selkirk 2011) ensures that the incorporated argument moves to the verb and not vice versa. The technology of feature checking and the notion of ‘feature sharing’ (Pesetsky and Torrego 2007) are applied to categorial selection, which makes head-argument pairs visible to PF. Finally, the idea that syntactic domains are sent to the interfaces in stages captures the fact that only NPs (not DPs, PPs, or CPs) can be incorporated (Uriagereka 1999, Chomsky 2000, 2001, Svenonius 2004, Hiraiwa 2005).

This analysis has two positive outcomes for Niuean syntax. First, it eliminates the need to posit different locations for the generation of absolutive, middle, and instrumental arguments depending on whether the structure will ultimately be an instance of VSO or VOS, and, in the case of VOS, whether the incorporated NP is an absolutive, middle, or instrumental object. Second, a prosodic account of Niuean PNI allows for a uniform V^0 -movement analysis of Niuean V1, which in turn allows for a more parsimonious account of Niuean argument structure and the formation of the verbal complex, especially when compared to a VP-movement analysis (see Chapter 5).

1.2.4 Head-raising account of Niuean V1

Chapter 5 proposes a head-/ V^0 -raising account of Niuean V1. Due to its incompatibility with the syntactic approach to PNI, a V^0 -raising account of Niuean V1 was previously untenable. Once PNI receives a prosodic analysis, however, the V^0 -raising account becomes possible. This development has a number of positive outcomes for Niuean syntax, which are introduced below.

The Niuean verbal complex includes a number of particles that surface to the right of the verb, although their meanings suggest that they are generated relatively high in the clause. These particles include the postverbal perfective marker *tuai*, which ordinarily

surfaces in conjunction with the preverbal perfective marker *kua*, and a handful of aspectual adverbs including *tūmau* ‘always’ and *hololoa* ‘often.’ Only a V^0 -raising analysis can generate both the preverbal and postverbal perfective markers in the same aspectual projection and produce the attested order: the verb moves to Asp^0 , where it forms a complex head with the preverbal perfective marker *kua*, and together $Asp^0 + V^0$ move to T^0 . The postverbal perfective marker, located in the specifier of $AspP$, is not on the head-raising trajectory, and so it surfaces in postverbal position. Similarly, aspectual adverbs, which are adjoined to $AspP$, surface postverbally because the verb moves above them.

The V^0 -raising analysis also captures the relationship between nominal arguments and postverbal particles with a degree of precision that is impossible in the context of a VP-raising analysis (Massam 2000, 2001). I introduce a V^0 -raising analysis for the high applicative structure in which the applicative head *aki* enters the derivation low enough to introduce the instrumental argument. Next, an account of the postverbal particle *oti* is proposed in which this particle enters the derivation high enough to scope over the external argument (see 5.4.2 for specifics, including trees). In contrast, only the relative word order of these particles is reflected in the VP-raising analysis.

The V^0 -raising analysis also has a number of theoretical advantages over the VP-raising analysis. For example, the V^0 -raising analysis eliminates phonologically vacuous structure, for which the language has overt particles. In the VP-raising analysis, T^0 is perpetually null, while the actual tense particles are generated in an extended CP projection. Similarly, the VP-raising analysis posits a series of null v^0 s whose sole purpose is to offer an intermediary position for VP roll-up movement (Massam 2013); however, Niuean also has overt v^0 s, which never host the rolled-up VP. In the context of the VP-raising analysis, this extra functional structure is necessary for predicting the attested word order and the inverse scope of postverbal particles. Chapter 5 of this dissertation demonstrates how the V^0 -raising analysis arrives at the same end with less phonologically vacuous structure.

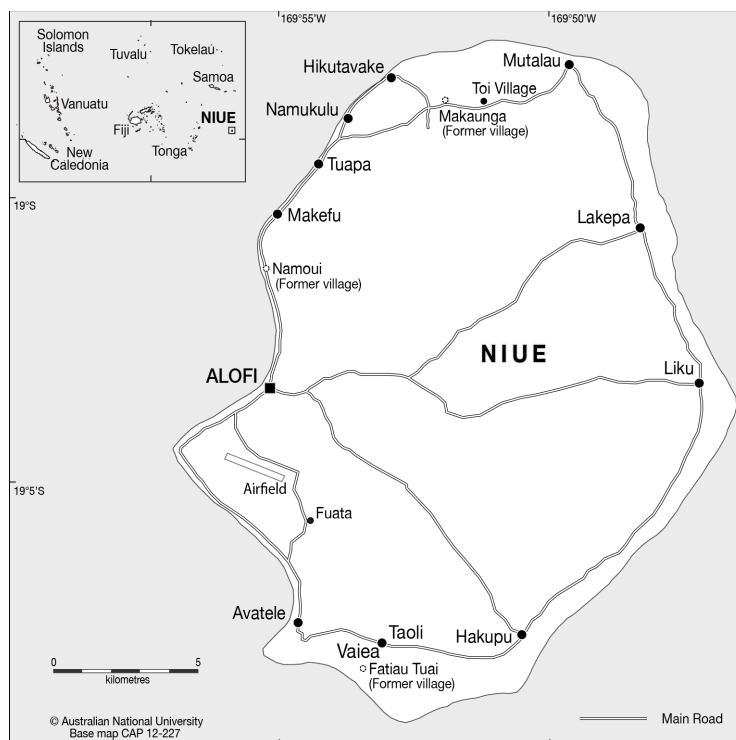
1.3 Niuean essentials

1.3.1 Geography and genetic affiliation

The Niuean language is spoken by approximately 6,500 people (Siosikefu and Haberkorn 2008) living primarily in Auckland and Wellington, New Zealand and Niue. Niue is a Polynesian island that recognizes both Niuean and English as official languages, and the majority of its Niuean-speaking population is Niuean-English bilingual. The population of Niue, estimated to be only 1,400 (UNESCAP 2011), is threatened by emigration to New Zealand, because while Niue is self-governing, it maintains close political and economic ties to New Zealand. It is located approximately 1,800 miles northeast of New Zealand, 375 miles northeast of Tonga, and 400 miles south of Samoa.

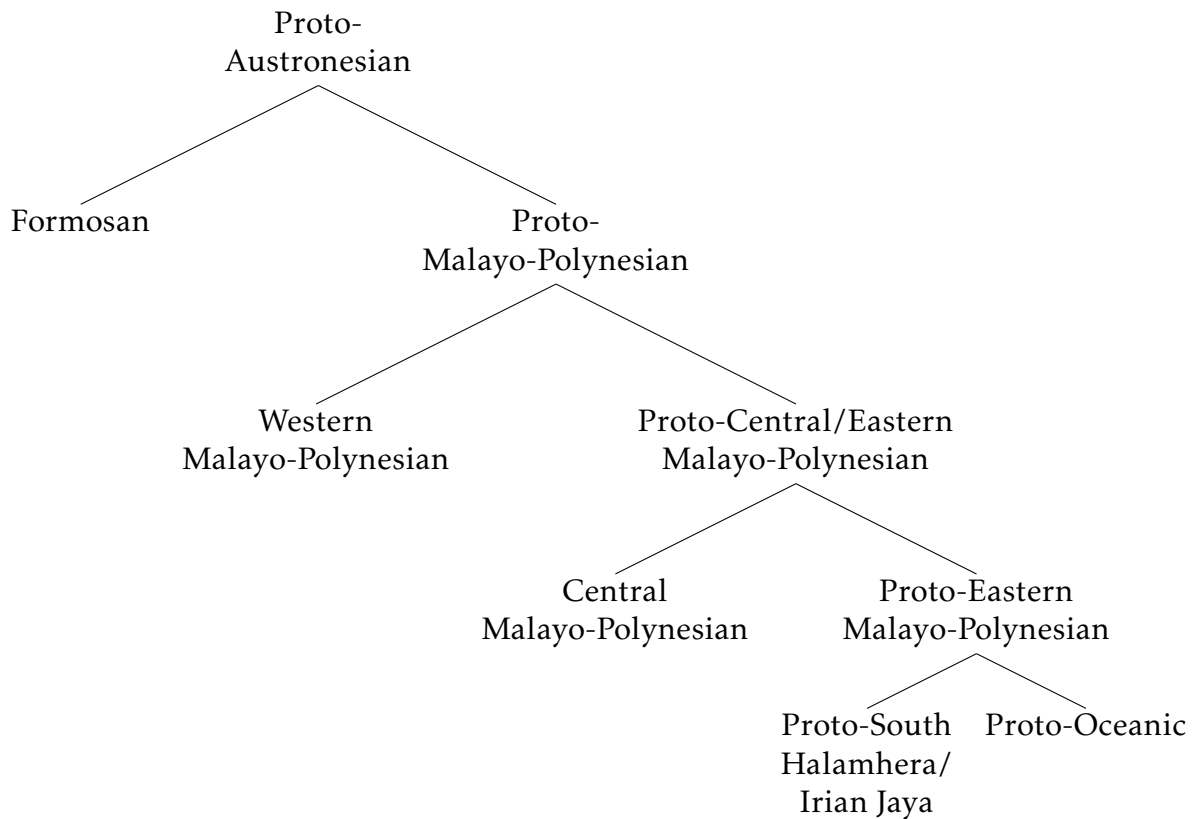
(8) Map of Niue

CartoGIS, College of Asia and the Pacific, The Australian National University



Niuean belongs to the Oceanic branch of Austronesian languages. Following Blust (1983/84, et seq.) and Lynch et al. (2011), Figure (9) shows the higher-order branching of Proto-Austronesian, with Proto-Oceanic at the bottom right of the tree.

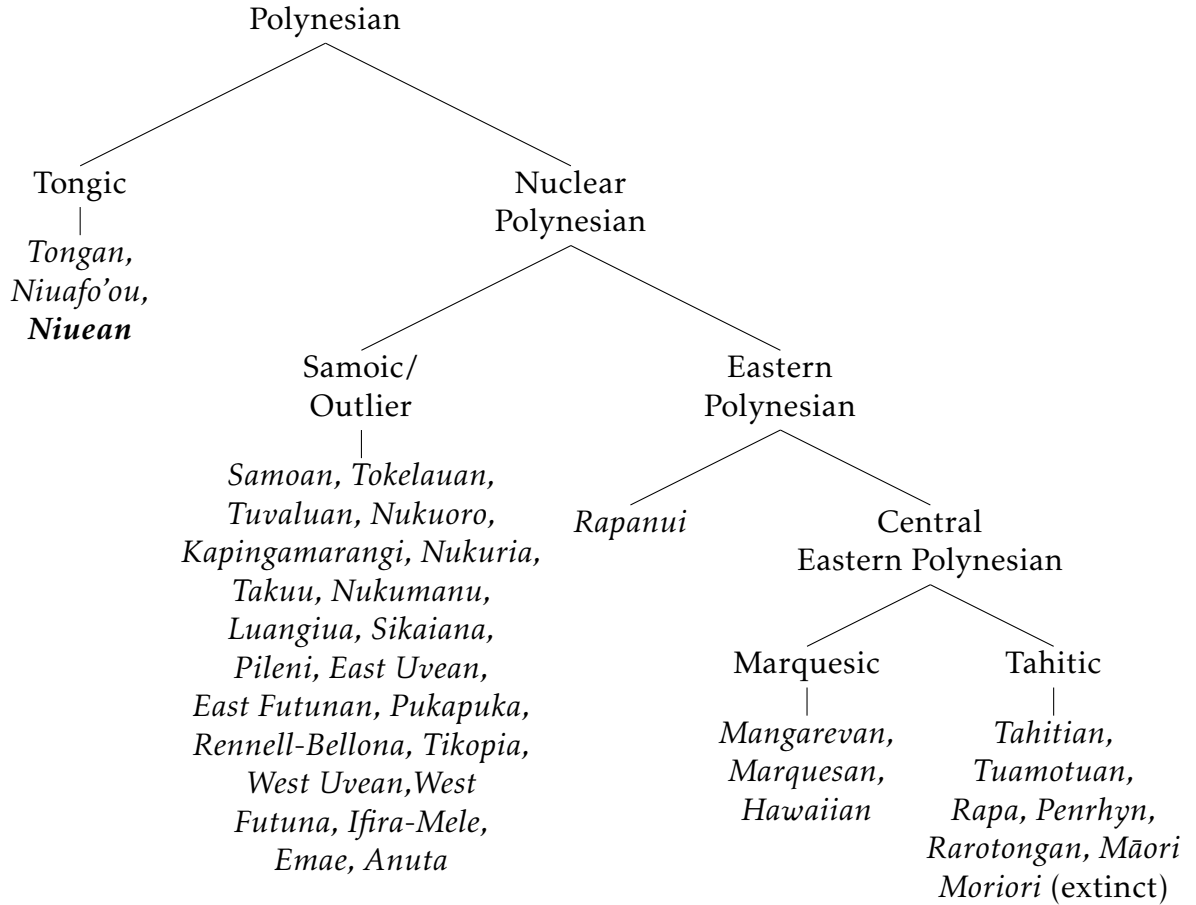
(9) Higher-order subgrouping of Austronesian family



Between 450 and 600 languages have been classified as Oceanic (Lynch et al. 2011). The Oceanic family is grouped most basically into a Western branch and a Central/Eastern branch. The Polynesian languages, of which Niuean is one, belong to the Central Pacific branch of the Central/Eastern subgroup of Oceanic languages. The major subgroups of Central/Eastern Oceanic include i) Southeast Solomonic ii) Utupua and Vanikoro, iii) Southern Oceanic iv) Micronesian and v) Central Pacific (Lynch et al. 2011).

Figure (10) shows the standard subgrouping of Polynesian languages (Pawley 1966, 1967, Clark 1979, Lynch et al. 2011):

(10) Polynesian group



1.3.2 Data and orthographic convention

The majority of the examples used in this thesis come from i) consultant work, ii) theoretical and descriptive literature, and iii) Niuean language learning materials. A non-exhaustive list of published materials from which data is drawn is given in (11):

(11) List of published data sources (incomplete)

- a. *Studies in Niuean Syntax* (Seiter 1980)
- b. *Tohi Vagahau Niue: Niue Language Dictionary* (Sperlich 1997)
- c. *Haia: An Introduction to Vagahau Niue*, cited as (Haia 2010)
- d. “Pseudo noun incorporation in Niuean” (Massam 2001)

These sources, and this dissertation, follow an orthographic convention that warrants a few explanatory remarks. Niuean has a five-vowel system, /i e a o u/, in which each vowel surfaces in one of three non-qualitative variations (Seiter 1980, Sperlich 1997), as shown below:³

(12) Three-way surface distinction (Rolle and Starks to appear)

a. Short: <a>

afua ‘fine’

b. Long: <ā>

āfou ‘adze’

c. Rearticulated: <aa>

aaфу ‘hot’

Niuean orthographic convention overlaps with broad IPA transcription to a large extent. A few notable exceptions include i) <f, v>, which are more accurately described as bilabial [ɸ, β]; ii) <t>, which is pronounced as [s] when followed by /e/ or /i/; iii) <g>, which is pronounced [ŋ]; and iv) <k>, which is pronounced [ɣ] intervocally.

1.3.3 Morphosyntax and predicate structure

The purpose of this section is to introduce a few properties of Niuean clause structure that will make the Niuean data in this dissertation more accessible to readers who are unfamiliar with Polynesian languages.

Niuean is a head-initial, dependent-marking language with an ergative/absolutive case-marking system. As such, case particles precede their nouns. Niuean has different case-marking paradigms for common nouns and proper nouns/pronouns (13):

³Rolle and Starks (to appear) argue that long and rearticulated vowels are allophonic variants whose distribution is determined by stress.

(13) Ergative and absolutive case markers

	Ergative	Absolutive
Common nouns	<i>he</i>	<i>e</i>
Proper nouns/pronouns	<i>e</i>	<i>a</i>

In examples (14) and (15), the subjects of transitive clauses (shown underlined) bear a different case marker than the subjects of intransitive clauses (shown underlined), which bear the same case marker as the objects of transitive clauses (shown in italicized). Also note that (14a) and (15a) illustrate the common noun paradigm, while (14b) and (15b) illustrate the proper noun/pronoun paradigm.

(14) Transitive clause

- a. Kua kitia he tama *e* *maukoloa* *he* fale koloa haana.
PFV see ERG child ABS shopkeeper LOC shop POSS
'The child saw the shopkeeper at his shop.'
- b. Kua kitia e Sione *a* *Peleni* *he* fale koloa haana.
PFV see ERG Sione ABS Peleni LOC shop POSS
'Sione saw Peleni at his shop.'

(15) Intransitive clause

- a. To fano e kāmuta *ke* *he* taone apogipogi.
FUT go ABS carpenter GL LOC town tomorrow
'The carpenter will go to town tomorrow.'
- b. To fano a Sione *ke* *he* taone apogipogi.
FUT go ABS Sione GL LOC town tomorrow
'Sione will go to town tomorrow.'

In addition to subjects and objects, other nominal arguments are also case-marked in Niuean. For example, (14) includes the oblique case marker *he*, which is generally found with locative arguments. Based on Seiter (1980: 37), the table in (16) provides an overview of all the Niuean nominal particles, which differ according to whether the associated argument is a common noun or a proper noun/pronoun.

(16) Niuean nominal markers

	Erg	Abs	Inst	Loc	Goal	Comtv	Poss	Ben
Common nouns	<i>he</i>	<i>e</i>	<i>aki e</i>	<i>he</i>	<i>ke he</i>	<i>mo e</i>	<i>he</i>	<i>ma e</i>
Proper nouns/pronouns	<i>e</i>	<i>a</i>	<i>aki a</i>	<i>i</i>	<i>ki</i>	<i>mo</i>	<i>a/ha</i>	<i>ma (ha)</i>

Niuean clauses generally display VSOX constituent order, or more specifically, the order shown below:

(17) Discourse Particles – Predicate – Core Arguments – Non-Core Arguments

In most cases, one or more tense-aspect-mood (TAM) marker precedes the predicate, although Niuean clauses may also lack overt tense marking. With the exception of PNI clauses, which are introduced in the next section, subjects precede objects in transitive clauses. Examples (14) and (15) above illustrate Niuean constituent order in the context of a verbal predicate.

Nonverbal predicates also occur in initial position, as illustrated by the nominal predicate in (18) and the locative predicate in (18b).

- (18) a. Ko e ekekafo a ia.
 PRED.NOM ABS doctor ABS 3SG
 ‘He was a doctor.’ (Seiter 1980:54)
- b. Hāhā i loto he fale e kau kaihā.
 PRED.LOC in inside GEN house ABS group thief
 ‘A group of thieves was inside the house.’ (Seiter 1980: 55)

Returning to verbal clauses, Niuean predicate structure can be quite simple, consisting of only a verb. It can also be quite complex, as the variety of verbal particles and modificational elements in (19) suggests:

(19) Predicate Structure

- a. Preverbal particles and modificational predicates:
 TAM – NEG – Restructuring verbs

- b. Postverbal particles and modificational predicates:

MAN/DIR – APPL – V – LOC/T RP – ASP Adverb – EMPH – PFV – INTERR

An example of a predicate with a number of different components is shown in (20).

- (20) To nākai liu feleveia foki a taua.
 FUT NEG ITT meet EMPH ABS 2.DU.INC
 ‘We will never again meet.’ (Setier 1980: 16)

I will return to the topic of Niuean predicate structure in Chapter 5.

1.3.4 Pseudo Noun Incorporation (PNI)

Massam (2001) coined the term pseudo noun incorporation (PNI) to reflect her novel insight into the structure Seiter (1980) calls noun incorporation. An example PNI clause and its VSO counterpart are given in (21a) and (21b), respectively. Note that the major constituents in the PNI example are arranged in VOS order. In all PNI clauses, the ‘incorporated’ object surfaces immediately to the right of the main verb and without any intervening functional material.

- (21) PNI as compared to VSO⁴
- a. Kua fakahū he ekekafo e tohi.
 PFV send ERG doctor ABS letter
 ‘The doctor sent the letter.’
- b. Kua fakahū tohi e ekekafo.
 PFV send letter ABS doctor
 ‘The doctor sent the letter.’

While the incorporated argument may appear to form some sort of compound with the verb in PNI constructions, these constructions also have a number of characteristics which make them unlike incorporation structures in other languages. In particular, PNI

⁴Unless otherwise noted, data come from Niuean language consultants. However, many of the PNI examples in this dissertation are based on examples already found in the literature, e.g. Seiter (1980), Sperlich (1997), and Massam (2001).

objects can be quite complex. Incorporated arguments (shown in italics) can be modified by adjectives (22a), coordinate phrases (22b), and nonfinite relative clauses (22c).

- (22) a. Kua onoono *fakatino mahaki toili* e tama he aoga.
 PFV look.at pictures huge large ABS child LOC school
 ‘The child is looking at extremely large pictures at school.’
- b. Ne tō *talo mo e tau fiti* e magafaoa.
 PST plant taro COMTV ABS PL flower ABS family
 ‘The family planted taro and flowers.’
- c. ...ke kumi *mena ke nonofo ai* a lautolu.
 DEP.T seek thing DEP.T settle RP ABS 3.PL
 ‘...they sought a place to settle.’ (Massam 2001: 160)

There are some limitations to what types of objects can be incorporated. For example, an incorporated argument cannot contain a finite relative clause, as illustrated by the ungrammaticality of (23):

- (23) *Ne inu kofe ne taute e au a Sione.
 PST drink coffee PST make ERG 1.SG ABS Sione
 Intended: ‘Sione drank coffee that I made.’ (Massam 2001: 168)

Massam (2001) attributes the difference in grammaticality between (22) and (23), both of which contain relative clauses, to the fact that incorporated arguments are necessarily NPs; on the assumption that nominals modified by finite relative clauses necessarily project a functional layer higher than NP, PNI constructions cannot incorporate finite relative clauses.

It is also impossible to incorporate pronouns and proper nouns. For example, (22a) and (24b) show that the verb *onoono* ‘look at,’ can generally participate in PNI constructions. However, when the verb’s object is a pronoun, as in (24c), or a proper noun, as (24d), incorporation is no longer an option.

- (24) a. Kua onoono mai a ia (*ki a au*) / (*ki a Sione*) / (*ke he tama*).
 PFV look.at DIR ABS 3.SG GL ABS 1.SG GL ABS Sione GL LOC child
 ‘He looked at me/Sione/the child.’

- b. Kua onoono *tama* mai a ia.
 PFV look.at child DIR ABS 3.SG.
 ‘He looked at the child.’
- c. *Kua onoono *au* mai a ia.
 PFV look.at 1.SG DIR ABS 3.SG
 Intended: ‘He looked at me.’
- d. *Kua onoono *Sione* mai a ia.
 PFV look.at Sione DIR ABS 3.SG
 Intended: ‘He looked at Sione.’

Examples (24a-b) and (22a) show the incorporation of what is known as a “middle” object in the Polynesian literature following Chung (1978). Verbs that select middle objects are psych verbs, i.e., verbs of perception, cognition, and emotion (although not all psych verbs take middle objects).⁵ Middle objects are marked with the same case as goal DPs: *ki a* for proper nouns/pronouns and *ke he* for common nouns. Examples of Niuean clauses with goal DPs (shown underlined) are given in (25):

- (25) a. Fia tutala a au ki a Sione.
 want talk ABS 1.SG GL ABS Sione
 ‘I want to talk to Sione.’ (Seiter 1980: 32)
- b. Ne tutala a au ke he tau tagata.
 PST talk ABS 1.SG GL LOC PL person
 ‘I was talking to people.’

⁵Some verbs can take either a middle object or an absolutive object, as in (1). Seiter (1980) reports that the choice depends on whether the real world action described by the verb has an “observable effect” on the object. If it does, the absolutive construction is more felicitous.

- (1) a. Fakalilifu a ia ke he tau momotua.
 respect ABS 3.SG GL LOC PL OLD.PL
 ‘He respects the old people.’
- b. Fakalilifu e ia e tau momotua.
 respect ERG 3.SG ABS PL OLD.PL
 ‘He respects the old people.’ (Seiter 1980: 33)

- c. Fano a ia ke he tapu he oho tapu.
 go ABS 3.SG GL LOC church LOC day Sunday
 ‘He goes to church on Sundays.’ (Seiter 1980: 74)

Although middle objects and goal DPs are marked with the same case, they behave differently with respect to PNI. Whereas examples (22a) and (24a) show that middle objects can incorporate, the examples in (26) show that goal DPs do not incorporate:

- (26) a. *Ne tutala *tagata* a au.
 PST talk people ABS 1.SG
 Intended: ‘I was talking to people.’
 b. *Fano *tapu* a ia he aho tapu.
 go church ABS 3.SG LOC Sunday
 Intended: ‘He goes to church on Sundays.’ (Seiter 1980: 74)

This dissertation discusses three types of PNI constructions that differ according to the type of object they incorporate: i) a direct object (PNI-abs), as in (21) and (22b) ii) a middle object (PNI-mid), as in (22a) and (24b) or iii) an instrumental object (PNI-inst), as in (27), below.

- (27) VSO/PNI pair, PNI-inst
 a. Kua fakahū he ekekafo e tohi *he vakalele*.
 PFV send ERG doctor ABS letter LOC airplane
 ‘The doctor sent the letter on the airplane.’
 b. Kua fakahū *vakalele* he ekekafo e tohi.
 PFV send airplane ERG doctor ABS letter
 ‘The doctor sent the letter on the airplane.’

As previously observed, the incorporated argument surfaces immediately to the right of the verb without any intervening functional morphology (e.g., no case markers, plural markers, etc.). Massam (2001) draws a connection between this structural observation and the unique semantic properties of PNI clauses: the incorporated argument is non-specific and non-referential and the event is durative or frequentive. Also note that

postverbal particles, e.g., the directional particle in (24b), must follow the incorporated argument.

PNI-abs, PNI-mid, and PNI-inst are all productive: it seems that the only requirement of the verb is that it is underlyingly transitive, as subjects cannot incorporate. In fact, no other types of argument (e.g., locatives, benefactives, etc.) can incorporate. A given verb can also incorporate a wide variety of objects; PNI constructions are not limited to verb-object pairs that commonly occur together, such as *kai ika* ‘eat fish.’

Finally, Massam (2001) and Seiter (1980) discuss another incorporation structure, existential PNI, which this dissertation does not address. Existential PNI differs from other types of PNI in a few notable ways. It only occurs with only two verbs: *muhu* ‘have plenty/be plentiful’ and *fai* ‘have/be.’ Incorporation with *muhu* is obligatory (28). In the case of *fai*, it is obligatory with the ‘have/be’ interpretation and optional with a ‘make’ interpretation (compare (29b) to (29c)) (Sperlich 1997, Massam 2001, cf. Seiter 1980).

- (28) Kua muhu tala tūmau ha mautolua tama fīfine...
 PERF have=plenty story always gen poss child girl
 ‘Our girl had plenty of stories to tell...’ (Sperlich 1997: 234 from Massam 2001)

- (29) a. Fai kulī a Pulevaka.
 HAVE dog ABS Pulevaka
 ‘Pulevaka has a dog.’
 b. *Fai e Pulevaka e kulī.
 HAVE ERG Pulevaka ABS dog
 Intended: ‘Pulevaka has a dog.’ (Seiter 1980: 77)
 c. Kua fai nakai e umu haau?
 PERF make INTERR ABS OVEN POSS
 ‘Have you made your oven yet?’ (Sperlich 1997: 61 from Massam 2001)

In conclusion, the basic characteristics of the PNI constructions discussed in this dissertation (30):

(30) Characteristics of PNI:

- a. PNI is a productive phenomenon that applies to direct, middle, and instrumental objects;
- b. The incorporated object surfaces immediately to the right of the verb;
- c. Postverbal particles (e.g., directional particles) follow the incorporated object;
- d. The incorporated object is not preceded by overt functional morphology;
- e. The incorporated object can be modified by adjectives, coordinate phrases, and nonfinite relative clauses;
- f. The incorporated object is non-specific and non-referential;
- g. The event is durative or frequentive.

Chapter 2

Verb initial languages

2.1 Introduction

Although verb-initial (V1) clauses occur in non-V1 languages, this chapter focuses on V1 clauses in V1 languages, because languages with dominant V1 order exhibit a number of common characteristics, such as VOS/VSO alternations, that are crucial to many analyses of V1 structures (cf. Carnie and Guilfoyle 2000; Carnie et al. 2005; Chung 2006). Austronesian and Mayan languages receive particular focus due to their diversity and typological overlap. The Mayan and Austronesian languages are also relatively familiar, as a large portion of the V1 literature focuses on these two families.

The Austronesian language family, with over 1000 members, is widespread and diverse (see Blust 2009 for an overview). The Mayan family is less so, with approximately 30 members located primarily in Guatemala and Mexico (Campbell 1997, England 1994, and Suárez 1983). Both families include languages with different V1 patterns—VSO, VOS, and VSO/VOS-alternating—and both share typologically unusual properties that extend beyond those expected for V1 languages. For example, both Austronesian and Mayan languages have unique extraction asymmetries that are nearly mirror images of each other. Broadly speaking, in many Austronesian languages only subjects can extract

freely, while in many Mayan languages only non-subjects can (See 2.3.1 for the ‘Subject Only Restriction’, in Austronesian and Stiebels (2006) for the ‘Agent Focus’ construction in Mayan.) The extent to which this property and others are coincidental or derivative of other linguistic attributes has yet to be determined.

The remainder of this section introduces common characteristics of V1 languages and the main analyses of V1 clauses. Sections 2.2-2.4 discuss specific analyses of V1 phrase structure, subdivided according to the basic word order each analysis predicts and the movement operation each analysis adopts. Sections 2.5-2.8 extends the discussion to three more themes in the V1 literature: EPP, VP-constituency, and post-syntactic operations. Section 2.9 concludes.

2.1.1 Overview of V1 languages

According to typologists, 12-19% of the world’s languages have dominant V1 word order (Tomlin 1986, van Everbroeck 2003, Dryer 2005). V1 languages come from a diverse group of families, and include languages of Africa (Afro-Asiatic: Berber; Biu-Mandara; a number of Semitic languages; Nilo-Saharan: Surmic languages; Turkana); Europe (Indo-European: Celtic); Central America (Mayan; Oto-Manguean: Zapotecan and Chinantecan); North America (Salish; Wakashan; Algonquian); South America (Arawakan); South East Asia and the Pacific (Austronesian).

It is difficult to determine the dominant word order of many languages.¹ This is particularly true for V1 languages (Steele 1978): some V1 languages are rigidly VSO, e.g., Q’anjob’al (Mayan), while others are rigidly VOS, e.g., Malagasy (Austronesian), but many are VOS/VSO-alternating, e.g., Ojibwe (Algonquian).

¹Researchers use different methodologies to determine dominant word order, e.g., raw frequency, contextually neutral word order, and the order that is used to interpret ambiguities; this chapter adopts the order reported in the literature for any given language.

(31) Q'anjob'al VSO

Max-Ø y-uk' ix ix kapey.
PERF-3ABS 3ERG-drink CL woman coffee
'The woman drank coffee.'

(32) Malagasy VOS

N-ahita ny voalavo ny akoho
PST-see DET rat DET chicken
'The chicken saw the rat.'

(33) Ojibwe VSO/VOS

- a. W-gii-sham-a-an kwe miin-an binoojiiny-an.
3ERG-PST-feed-3ANIM-OBV woman blueberries-OBV child-OBV
'The woman fed the blueberries to the child.'
- b. W-gii-sham-a-an miin-an kwe binoojiiny-an.
3ERG-PST-feed-3ANIM-OBV blueberries-OBV kwe child-OBV
'The woman fed the blueberries to the child.' (Rhodes 1994: 437)

Common properties of V1 languages

Because so many V1 languages exhibit VSO/VOS alternations, researchers commonly treat VSO, VOS and VSO/VOS-alternating languages as a single class. Even rigidly VOS and rigidly VSO languages share many attributes beyond major sentential constituent word order. For example, they tend to have prepositions (whereas both prepositions and postpositions are attested in non-V1 languages), and they tend to have postnominal relative clauses.² Thus, V1 languages have a particularly strong (left-)headedness feature.

²However, see Chung's (1998) discussion of prenominal relative clauses in Chamorro. It is possible that what looks like prenominal relatives are actually head-internal relative structures (cf. Law 2014 for this type of proposal for Tagalog). If so the existence of prenominal relative clauses is just an apparent exception.

(34) Headedness in relative clauses (a) and adpositions (b)

		V1	Non-V1
a.	Rel-N	*	✓
	N-Rel	✓	✓

		V1	Non-V1
b.	Po	*	✓
	Pr	✓	✓

Other common properties of V1 languages include the lack of a nonfinite verb form (Myhill 1985); absence of an overt copula (Carnie 1995); absence of a verbal expression meaning ‘have’ (Freeze and Georgopoulous 2000); and ergative alignment (Chung 2005; Polinsky 2013). The final two properties may be related: morphologically ergative languages generally lack the verb HAVE (Kayne 1993, Mahajan 1994). HAVE is taken to be composed of BE plus an incorporated empty adposition, which originates as the sister of the external argument (Freeze 1992; Kayne 1993). However, incorporation requires adjacency, and BE cannot be adjacent to an empty adposition in languages where the verb is peripheral in the clause. Ergativity is typically found in such languages (Mahajan 1994; 1997). Note, however, that while not all V1 languages are ergative, the absence of HAVE appears to be universal in the V1 domain. Furthermore, ergativity may be correlated with verb-peripherality, as opposed to just verb-initiality (Trask 1979; Mahajan 1994).

Assuming that double-object constructions are contingent upon the presence of an abstract HAVE morpheme (Harley 1996, 2002), V1 languages should not allow double-object constructions with verbs of giving (although applicative objects, projected by an extra head, should be possible). At the writing of this chapter, no counterexamples to this prediction have been observed, but more empirical work in this domain is necessary.

Finally, V1 languages have clause-initial *wh*-words (Wh1). This property was described in Greenberg’s work as *Universal 12* and further refined by Keenan (1978); Hawkins (1983); and Potsdam (2009):

(35) *Universal 12:*

If a language has dominant verb-initial (V1) word order in declarative sentences, it can put interrogative phrases first (Wh1) in interrogative questions.

(Potsdam 2009: 738, based on Greenberg 1963: 83)

The linear position of the *wh*-word may reflect various syntactic phenomena. It may be fronted through movement, or it may be the predicate of a cleft or pseudo-cleft, where the remaining constituent is or includes a headless relative clause. For further discussion, see Potsdam (2009), Potsdam and Polinsky (2011), and Section 2.6.

V1 and predicate-initiality

Many researchers prefer to characterize V1 languages as predicate-initial (Aldridge 2012, Paul 2000, 2001, Potsdam 2009, Potsdam and Polinsky 2011 and references therein for Austronesian; Aissen 1992, Norman and Campbell 1978, England 1991, and recently Coon 2013b for Mayan; Jelinek and Demers 1994, Davis and Matthewson 1999 for Salish; Wojdak 2008 for Wakashan). Several considerations support this perspective.

First, nonverbal predicates surface in clause-initial position in many V1 languages.

(36) Tagalog AP, PP, and NP predicates in initial position

a. Ma-taas si Juan.

AV-tall HON Juan

‘Juan is tall.’

b. Tungkol sa balarila ang libro.

about OBL grammar ANG book

‘The book is about grammar.’

c. Guro si Maria.

teacher HON Maria

‘Maria is a teacher.’ (Richards 2010: 11-12)

Nonverbal predicates may also display a mixed pattern. For example, prepositional and adjectival predicates are clause-initial in Tagalog, but nominal predicates only sur-

face in initial position if they are based on NPs (rather than DPs - for present purposes, as indicated by the presence of *ang*) (Richards 2010, see also Armstrong 2009 and Coon 2013b for Mayan).

(37) Tagalog DP predicates

- a. Si Gloria ang pangulo.
HON Gloria ANG president
'Gloria is the president.'
- b. *Ang pangulo si Gloria.
ANG president HON Gloria
'Gloria is the president.' (Richards 2010: 12)

According to Richards' theory of Distinctness (Richards 2010), the examples in (37) do not serve as counterevidence to the predicate-initial nature of these languages. Distinctness dictates that a linearization statement $\langle \alpha, \beta \rangle$ is only interpretable if α and β are adequately distinct from one another. If DP predicates surfaced in the canonical predicate position in these languages, it would result in the unlinearizable statement $\langle \text{DP}, \text{DP} \rangle$. If the DP predicate is not clause-initial, functional heads intervene between the subject and the predicate, making the subject-initial word order linearizable. Thus, the need to satisfy a well-formedness condition at the syntax-phonology interface masks the predicate-initial nature of the syntax in these cases.

Additionally, evidence for a morphosyntactic division between the primary lexical categories (N, V, Adj) is weak for many V1 languages. A number of researchers have proposed that these languages lack a distinction between verbal and nominal categories, either at the level of the root or the word (e.g., Jelinek and Demers 1994; Kaufman 2009; Haviland 1994; Tozzer 1921, and works cited therein). Other researchers argue that lexical category distinctions exist, but the evidence for these distinctions may be quite subtle (Chung 2012; Davis and Matthewson 1999; Lois and Vapnarsky 2006; Richards 2009).

2.1.2 Main analyses of V1

Some analyses of V1 derive all surface order from phrase structure; others locate certain properties of linearization at the syntax-phonology interface.

Most purely syntactic accounts preserve the constituency of the VP and use binary branching. The approaches can be categorized according to whether they (i) base-generate VOS and derive VSO, or (ii) base-generate SVO and derive both VSO and VOS. Within the accounts that base-generate SVO, some achieve the final verb-initial configuration via phrasal movement of the VP or equivalent, while others use head movement of V^0 .

Section 2.2 addresses those accounts that base generate VOS by orienting some or all specifiers to the right. The right-branching account of VOS can be extended to VSO/VOS-alternating languages by incorporating a theory of object postposing (Section 2.2.2). Section 2.3 discusses VP-raising accounts, which base generate SVO and derive V1 by phrasal movement. In the most basic case, the VP moves to a position higher than the subject, which results in a VOS structure. Remnant movement is posited to account for VSO where necessary (Section 2.3.2). Section 2.4 discusses V^0 -raising analyses, which base generate SVO and derive VSO by head movement. To adapt a V^0 -raising account for VSO/VOS-alternating languages, it is necessary to postulate an independent mechanism which reorders the subject and object. This is generally done via scrambling (Section 2.4.2). Sections 2.2-2.4 give particular attention to the following themes: the use of movement diagnostics to support specific proposals; the nature of VOS/VSO alternations; and the complications that arise when adverbs, oblique arguments, and particles are taken into consideration.

The analyses discussed in Sections 2.2-2.4 preserve VP constituency. Section 2.5 discusses two approaches, which do not preserve VP constituency: the flat structure approach and the Pronominal Argument Hypothesis (Jelinek 1984; Baker 1996). Analyses that place some attributes of word order at the syntax-phonology interface are presented in Section 2.6.

2.2 Base-generating VOS and deriving VSO

Certain syntactic accounts of V1 start with a right-branching, base-generated VOS structure and derive VSO. These accounts rely on the following related assumptions:³

- (38) *Phrase structure parameterization*: Phrase structure rules are parameterized, rendering the linear order of a head and its complement under X', and the linear order of X' and its specifier under XP, cross-linguistically flexible.
- (39) *Word order in narrow syntax*: The major constituents of the hierarchical structure achieve their final linearization in narrow syntax.

Both assumptions are contested. (38) is a traditional principle of X' Theory: phrase structure rules are parameterized, rendering the linear order of certain structural elements cross-linguistically flexible. Many researchers have moved away from this approach to a universalist view of phrase structure informed primarily by Kayne (1994), who observes that certain specifiers, e.g. those associated with *wh*-movement and V2 phenomena, are invariably on the left. Likewise, post-syntactic linearization, where sister nodes are unordered until PF, has proven to be a viable alternative to (39) (see Chomsky 1995; Fox and Pesetsky 2005, a.o.).

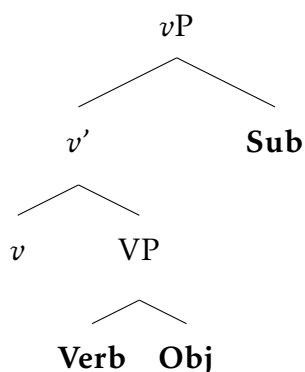
In general, there is more word order variation in V1 languages than just the relative position of the subject and the object. This variation is important to our understanding of how and why the verb surfaces in clause-initial position. This section presents the right-branching and object-postposing accounts of V1 in the context of other word order variations, such as SVO, 'apparent' SVO, and variation in adjunct placement.

³For this class of analyses, it is assumed that PF factors cannot reorder constituents after narrow syntax.

2.2.1 VOS and right-branching specifiers

Base-generating VOS word order and preserving the constituency of the VP can only be achieved if the subject originates in a right-branching specifier. Such an analysis has been proposed for Mayan (Aissen 1992, England 1991), for languages in the Malayo-Polynesian branch of Austronesian (Chung 1998 for Māori; Guilfoyle et al. 1992, Paul 2000 for Malagasy) and for Salish languages (Davis 2005 for St'át'imcets; Wojdak 2008 for Nuuchahnulth).

(40) Right-branching specifier⁴



Right-branching specifier accounts of V1 may be uniform (see Chung 1998 for Māori) or they may apply right-branching only to the specifiers of lexical phrases, which is referred to in what follows as parameterized right-branching specifiers (see Aissen 1992 for Tzotzil, Popti' (Jakalteq), and Tz'utujil; see also Guilfoyle et al. 1992 for the opposite setting in Austronesian, e.g., functional specifiers to the right, lexical specifiers to the left).

The choice between the uniform and parameterized approaches interacts with the status of a common word order alternative for V1 languages: SVO. Researchers take two approaches to deriving SVO in V1 languages: the first analyzes preverbal material as belonging to the A'-domain, which the parameterized right-branching specifier approach handles easily by moving the subject out of the VP domain into a left-branching specifier

⁴The tree in (40) is updated to represent current assumptions about phrase structure.

(Section 2.2.1); the second reduces SVO to predicate-initial structures, which uniform right branching is well equipped to handle (Section 2.2.1).

Subject as an A'-element

Aissen (1992) proposes that specifiers associated with the projection of lexical categories in Tzotzil, Popti' (Jakalteq), and Tz'utujil are right-branching, while specifiers of functional categories are left-branching. Non-V1 structures are a consequence of movement to or base-generation in a left-branching specifier associated with topic or focus:

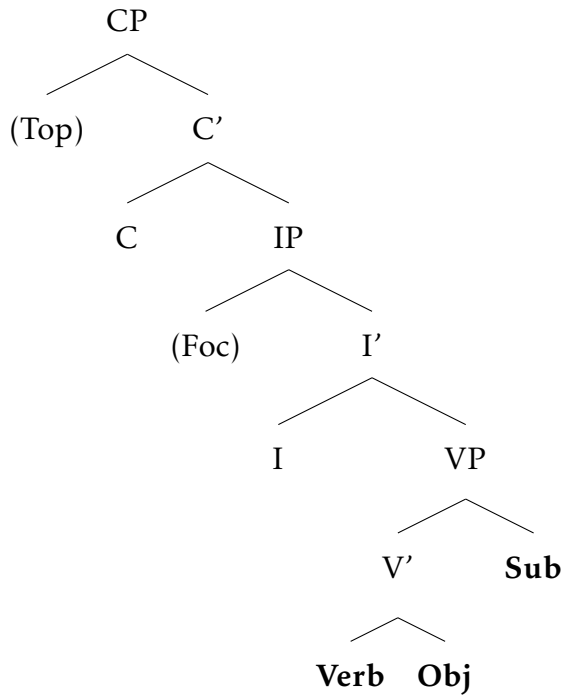
(41) Tz'utujil VOS/SVO

- a. X-Ø-kee-tij tzyaq ch'ooyaa'.
COM-3SG.ABS-3PL.ERG-eat clothes rats
'Rats ate the clothes.'
- b. Ja ch'ooyaa' x-Ø-kee-tij ja tzyaq.
DEF rats COM-3SG.ABS-3PL.ERG-eat DEF clothes
'The rats ate the clothes.' (Dayley 1985: 305-306)

Arguments are base-generated in the positions marked ‘subject’ and ‘object,’ but may subsequently move into the positions labeled ‘topic’ and ‘focus.’⁵

⁵Specifically for Tz'utujil, Aissen later elaborates that the overt subject in SVO clauses is base-generated in a functional specifier position and binds a lower pronoun (Aissen 1999). Also note that (42) glosses over Aissen's (1992) distinction between 'internal topics' and 'external topics'. Finally, the subject is represented in spec,V (not *v*), since this avoids the question of whether *v*P is a functional or lexical projection.

(42) Parameterized specifier account



Aissen's proposal captures the general observation that Mayan arguments follow the verb in pragmatically neutral clauses, but surface pre-verbally when they are associated with topic or focus (England 1991). Aissen associates the distinction between left- and right-branching specifiers with a contrast between lexical and functional categories. For a related proposal about specifier direction and information structure see Travis (2008).

'SVO' order as predicate-initial order

Apparent clause-initial subjects in V1 languages often turn out to be heads of predicate phrases or constituents of larger predicates. In this case, an apparent SVO structure can be reduced to a predicate-initial structure. An example is given in (43):

(43) Māori he-construction

- a. He paatai aahua pakeke ake teenaa.
CL questions somewhat difficult up that
'This is a rather difficult question.' (Bauer 1993: 488)

- b. He tamariki raatou.
 CL children 3PL
 ‘They are children.’ (Bauer 1993: 144)

Evidence that the fronted nominal is a predicate, and thus located in the same position as initial verb phrases, comes from negation (see Bauer 1993: 144-145). Māori negative expressions are stative verbs whose semantics indicates falseness (Hohepa 1969; Waite 1987; Bauer 1993: 139-146). An affirmative sentence is embedded under such verbs; its subject undergoes movement into the main clause to become the surface subject of the negative predicate. The negative form of (43b) is given in (44), where the embedded clause is introduced by *i te*:⁶

(44) Māori negation

- Eehara raatou_i [i te tamariki *t_i*]
 NEG.PRED 3PL DEP.CLAUSE children
 ‘They are not children.’ (Bauer 1993: 144)

A similar analysis has been proposed for the Polynesian actor-emphatic construction (see Chung 1978: 175ff., Clark 1976: 119ff. for Māori; Potsdam and Polinsky 2012 for Tahitian; Harlow 1986 for Eastern Polynesian in general), for constructions with fronted nominal predicates in Isbukun Bunun (Wu 2013), and for focus constructions and *wh*-questions in Yucatec (Tonhauser 2003). While it is unlikely that all seemingly SVO structures in V1 languages can be reduced to predicate-initial structures, this is a common option which should be kept in mind for analytical considerations.

Mayan languages and Austronesian languages share two properties that obscure the true nature of SVO clauses: non-verbal predicates, and a null copula. There is a dearth of predicate-initial analysis of apparent preverbal A'-elements (topic, Wh1, focus) in the Mayan literature (exceptions include Polian 2012, Tonhauser 2003, Travis 2013); but it is worth pursuing further for the theoretical parsimony it would add to the right-branching analysis of V1.

⁶For more on negation in Māori, see Chapter 5.5.

Obstacles to this approach for Mayan come from differences between genuine nominal predicates and apparent SVO. For example, nominal predicates in Yucatec Maya cannot surface with a definite article (45b), while preverbal subjects can (45c):⁷

(45) Yucatec Maya nominal predicates

- a. Ts'akyaj-ech.
 doctor-2SG.ABS
 'You're a doctor.' (Armstrong 2009: 11)
- b. *Le ts'akyaj-o'-ech (teech).
 DEM doctor-DIST-2SG.ABS 2SG
 ('You are the/that doctor.') (Armstrong 2009: 13)
- c. Le áak-o' t-u jaan-t-aj-Ø su'uk.
 DEM turtle-CL COM-3SG.ERG eat-TRANS-PERF-3SG.ERG grass
 'The turtle ate grass.' (Avelino 2009: 64)

The status of (apparent) SVO clauses is important to right-branching specifier accounts of V1. Uniform branching offers a more elegant approach than parameterized branching, as language-internal variation must be independently motivated in the latter (e.g., via a lexical/functional distinction, as in Aissen 1992). However, accounts that posit uniformly right-branching specifiers make the strong prediction that preverbal nominals are never located in specifier positions.

Some apparent SVO structures attribute a special emphasis to the element in initial position (see Bauer 1993 for Māori; Keenan 1976 for Malagasy; Schachter and Otnes 1983, Kroeger 1993 for Tagalog; previous references for the actor-emphatic construction in Polynesian). A uniform right-branching account could not reflect this property as straightforwardly as a parameterized account could, since only the latter allows specifiers of higher CP functional projections such as topic and focus to be placed on the left.

⁷See Gutiérrez-Bravo (2011) for an analysis that base-generates preverbal subjects (topics) in spec,C in Yucatec Maya. See also Adger and Ramchand (2003) for arguments that DPs cannot form predicates for independent reasons.

2.2.2 VSO derived by a right-branching subject and object postposing

Some approaches to V1 base-generate VOS and then move the object to a VP-external position, thus maintaining VP constituency. In her extensive study of word order patterns in Mayan languages, England (1991) concludes that VSO tends to occur in VSO/VOS-alternating languages when objects are animate, specific, definite or phonologically heavy.⁸ She proposes that Mayan languages are basically VOS, but that certain semantic variables, such as specificity, drive rightward movement of the object out of the VP to the right of the subject (see also Norman and Campbell 1978). (46) illustrates that a specific, animate subject can occur in either postverbal position, but a specific animate object is possible only under VSO order.

(46) K'iche' VSO/VOS alternations

- a. X- \emptyset -u-q'aluj le achi le ala.
COM-3SG.ABS-3SG.ERG-hug DEF man DEF youth
'The man hugged the youth.'

Impossible: 'The youth hugged the man.'

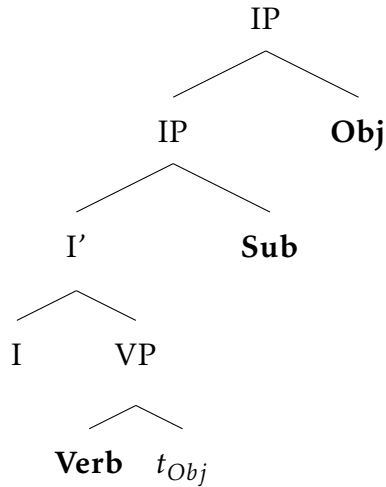
- b. X- \emptyset -u-q'aluj jun achi le ala.
COM-3SG.ABS-3SG.ERG-hug one man DEF youth
'The youth hugged a man.'

Impossible: 'A man hugged the youth.' (England 1991: 466-467)

Chung (1998) similarly proposes that VSO is derived from VOS in Māori, where VSO/VOS alternations are affected by agency and the (pro)nominal status of the DP (see also Bauer 1993). In Chung's analysis, VOS is base-generated and objects move into a right-branching functional projection.

⁸There is a good deal of overlap between the variables that condition VSO/VOS alternations in Mayan languages and those that condition object shift in, e.g., Germanic languages. For a discussion of the role played by specificity/definiteness in object shift, see e.g., Diesing (1996, 1997) and Erteschik-Shir (2005). See also Coon (2010) on a connection between VOS and object shift.

(47) Object postposing



Chung (1998) observes that if VSO were derived via rightward movement of the object, the object should behave like a moved constituent, which is an island to subextraction (Culicover and Wexler 1977; Wexler and Culicover 1980). In Māori, sentential objects must follow the subject, even though Māori is generally VSO/VOS-alternating. Extraction out of certain sentential subjects is allowed, but extraction out of sentential objects is banned entirely (Bauer 1993, Chung 1998).

As long as all of the apparent SVO clauses in Māori are predicate-initial, the implementation of object postposing is relatively straightforward for the uniform branching account of Māori. It follows from Chung's (1998) analysis that movement of the object to a higher specifier position would result in rightward movement, because all specifiers are right-branching. Accounting for the direction of displacement is more complicated when the specifier direction is parameterized. One way to illustrate this point is to consider clauses with adjuncts.

Object postposing and adjuncts

In the simple case of VSO, when a postposed object moves out of VP and into a specifier position, the relevant specifier must be higher than the subject, but low enough in the structure to still be right-branching. Recall that the presence of preverbal A'-elements

Certain Mayan languages, e.g., Tz'utujil, allow both (S)VOX and (S)VXO order. In (48a), the dative argument follows the theme (VOX) and in (48b), it precedes it (VXO).⁹ In both examples, the indirect object is introduced by a relational noun, which is the Mayanist term for a head that introduces oblique arguments.

a. N- \emptyset -kee-ya' paq cha-qe.
INCOM-3SG.ABS-3PL.ERG-give money RN-1PL
'They will give money to us.' (Dayley 1985: 156)

b. Inin x- \emptyset -in-ya' chee Aa Xwaan jun kotoon rxin
1SG COM-3SG.ABS-1SG.ERG-give RN youth Juan INDEF huipil RN
r-aanaa'.
3SG.ERG-sister
'I gave Juan a huipil for his sister.' (Dayley 1985: 312)

It would be quite surprising if indirect objects and adjuncts all adjoined lower in the clause than the cut off point for left-branching specifiers. For example, one would expect temporal or reason adjuncts to adjoin at the TP level. This would make the derivation of the (S)VXO order problematic, since TPs in this account have left-branching specifiers. The placement of lower vs. higher adjuncts in languages with optional VXO requires close consideration, particularly in the context of parameterized-branching accounts of V1.

44

Cases of VSO that challenge object postposing

England (1991), in line with Norman and Campbell (1978), hypothesizes that some Mayan languages have generalized the postposing of objects to become strictly VSO. Indeed, some Mayan languages, primarily those in the Q'anjob'alan and Mamean subfamilies, are rigidly VSO and do not impose specificity, animacy, or phonological weight restrictions on their objects (Mateo Toledo 2008). The examples in (49) show that Q'anjob'al maintains VSO word order when the object is specific, nonspecific and inanimate.

(49) Q'anjob'al VSO with specific, nonspecific, and inanimate objects

- a. Max- \emptyset y-il-a' naq winaq naq unin.
COM-3SG.ABS 3SG.ERG-hug-SS CL man CL boy

'The man saw the boy.'

Impossible: 'The boy saw the man.'

- b. Max- \emptyset y-il-a' naq winaq jun-tzan unin.
COM-3SG.ABS 3SG.ERG-hug-SS CL man INDEF-PL boy

'The man saw some boys.'

Impossible: 'Some boys saw the man.'

- c. Max- \emptyset y-il-a' naq winaq te' na.
COM-3SG.ABS 3SG.ERG-hug-SS CL man CL house

'The man saw the house.'

A synchronic analysis of VSO in Mayan languages without an alternative VOS word order is missing from the literature. Simply adopting the object-postposing account for VSO in these languages is neither theoretically nor empirically motivated.

Generalizing the object-postposing analysis too broadly in Mayan raises other concerns as well. Half of the VSO/VOS-alternating languages in England's survey allow both V1 orders when the arguments are unequal on an animacy/definiteness scale, provided that the higher of the two (i.e. the definite and/or animate argument) is interpreted as the subject. See also Minkoff (2000) on the effect of the anomaly hierarchy on word order in Mam. Furthermore, in clauses with two definite/animate arguments, speakers of some

languages interpret the argument adjacent to the verb as the object (giving the clause a VOS interpretation). Thus, the *factors* that influence postverbal word order are uniform across Mayan languages, but the *manner* in which they influence word order varies.¹⁰

For many languages it is important to consider a wide range of word orders when accounting for V1. Flexible word order in the postverbal domain does not necessarily equate to unconstrained word order, so the nature of VOS/VSO alternations must be taken into consideration. The ‘S’ in apparent SVO order may constitute a non-verbal predicate (as is common in Austronesian), but this is not the only option. Because of the strong prediction against preverbal nominals in specifier positions, the status of SVO clauses is particularly important to the uniform right-branching specifier account of VOS/VSO. For parameterized-branching specifier accounts of VOS/VSO, the location of oblique arguments and adjuncts relative to the object, especially in VSO clauses, is particularly relevant, because the object must be above the adjunct but not in a left-branching specifier.

2.3 V1 derived by phrasal movement

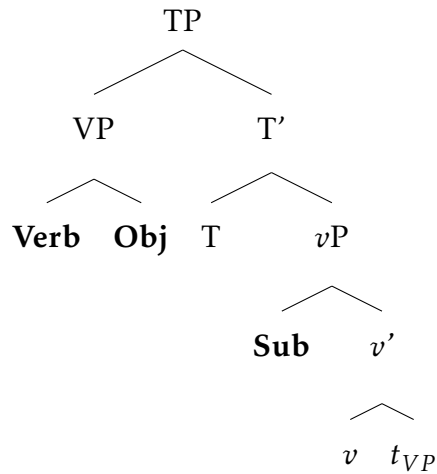
Analyses that derive V1 through VP-raising¹¹ into a position above the subject have been pursued extensively for Austronesian languages (Massam 2000, 2001, 2005, et seq. for Niuean; Pearson 2001, 2005, 2006, Pensalfini 1995, Rackowski and Travis 2000, Travis 2005 for Malagasy; Mercado 2002 for Tagalog; Aldridge 2002, 2004 for Seediq; Cole and Hermon 2008 for Toba Batak; Medeiros 2013 for Hawaiian). Outside Austronesian, Lee (2006) provides such an account of V1 word order in Quiaviní Zapotec (Oto-Manguean),

¹⁰Significant variation in postverbal word orders may be the reason why researchers sometimes turn to Optimality Theory (Prince and Smolensky 1993/2004) when addressing word order variation in Mayan (e.g., Gutiérrez-Bravo and Monforte 2010). Constraint competition allows researchers to avoid ruling out certain word orders categorically.

¹¹Specific accounts differ according to whether movement targets the VP itself or a higher maximal projection. All phrasal movement accounts discussed in this chapter are referred to as VP-raising accounts.

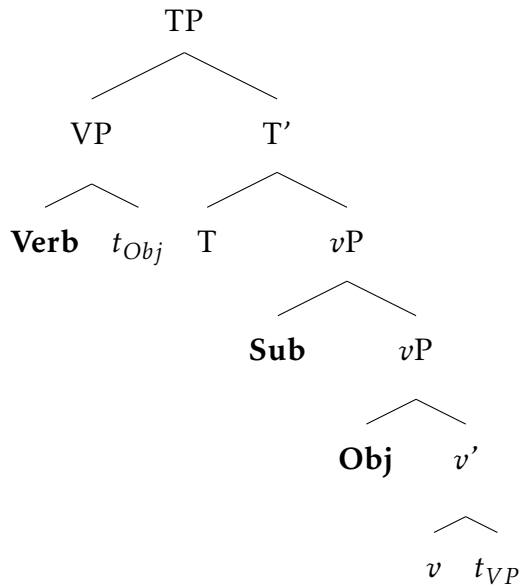
as does Duarte (2012) for Tenetehára (Tupí-Guaraní) and Coon (2010, 2013a) for Chol (Mayan). These languages vary between VSO, VOS, and VSO/VOS; the ability to derive all these orders is a virtue of the account. The tree below provides a first approximation:

(50) Phrasal movement



VP-raising accounts apply most straightforwardly to languages whose primary V1 word order is VOS (e.g., Seediq, Malagasy, and Toba Batak). Yet, in a version of VP-raising where the object evacuates the VP before the VP moves, i.e. VP-remnant movement, the VSO word order can also be derived.

(51) Remnant movement



VP-raising has been championed as a way of providing a uniform account of both V1 word orders in VSO/VOS-alternating languages (Carnie et al. 2005, Chung 2006, a.o.)

2.3.1 VOS via VP-raising

VP-raising accounts of V1 differ with respect to the following criteria:

(52) Differences between VP-raising accounts

- a. Highest maximal projection of the moved constituent
- b. Landing site of the moved constituent
- c. Motivation for XP movement

Opinion is divided as to whether it is the VP itself that is targeted for movement (Lee 2006; Massam 2001; Rackowski and Travis 2000), or the maximal projection containing the VP (Aldridge 2002; Cole and Hermon 2008, Coon 2010; Pearson 2001). Most arguments distinguishing between *vP*- and VP-raising are theory-internal (phasehood, for example). It is possible, however to distinguish different approaches to (52a) on the basis of adjunct behavior. Depending on where adjuncts are generated, their surface location

can indicate whether or not they are contained by the fronted XP. This in turn can reveal the highest maximal projection of the moved constituent. For more specifics, see Chung (2005); Kaufman (2006); Chung and Polinsky (2009); and Rackowski and Travis (2000).

Most researchers agree that the moved VP appears in spec,T (52b). However, Aldridge (2002) and Pearson (2001) argue, for Seediq and Malagasy, respectively, that the VP lands in the specifier of a higher functional projection. Fronting the VP higher than TP ensures that it will surface to the left of the topic, which is the rightmost element in a simple transitive clause in both languages.

VP-raising accounts display immense diversity in terms of their proposed motivation for movement (52c). There is consensus that the VP moves to satisfy the EPP, most likely on the T head, but no agreement about which feature of T is valued. Section 6 discusses how EPP-features are used to motivate different accounts of V1.

VP-raising and the Subject Only Restriction

Some of the strongest evidence in support of the VP-raising account of V1 comes from island constraints on VPs in VOS clauses. VPs in VOS clauses generated by VP-raising are expected to behave like islands due to the Freezing Principle (Culicover and Wexler 1977; Wexler and Culicover 1980), which holds that moved constituents are islands to extraction. Thus, once a VP moves, everything internal to that VP—modifiers, objects, operators—is frozen.

Researchers have argued that the well-documented subject-only restriction in Austronesian follows from the VP-raising account of VOS word order (e.g., Aldridge 2002 for Seediq; Cole and Hermon 2008 for Toba Batak). The essence of this restriction is that in a given clause, only one argument (the external argument, or possibly the subject) is accessible to A'-movement; all other arguments are ineligible to A'-move (Keenan 1972; Gärtner et al. 2006; Chung and Polinsky 2009).

In Austronesian languages with a strict version of this condition, such as Seediq or

Malagasy, structures that involve movement (e.g., constituent questions, relative clauses, topicalization) can only access constituents that are external to the VP. For an internal argument to be extracted, the predicate must undergo a change in voice morphology (cf. Pearson 2005, Rackowski and Richards 2005 for different accounts of this restriction in Malagasy).

(53) Seediq clause-initial constituent questions¹²

- a. Maanu ka wada burig-un na Ape?
 what ABS PERF buy-TV ERG Ape
 ‘What did Ape buy?’
- b. Ima ka wada m-ari patis-ni?
 who ABS PERF ANTIP-buy book-DEF
 ‘Who bought this book?’ (Aldridge 2002: 394)

It follows from the Freezing Principle that no subconstituents can be extracted from a displaced VP. This prediction captures the data in Seediq very well: both internal arguments and VP adjuncts must remain in situ in movement-related structures.

(54) Seediq adjunct *wh*-questions

- a. M-n-ari inu patis Ape?
 AP-PERF-buy where book Ape
 ‘Where did Ape buy books?’
- b. *Inu m-n-ari patis Ape?
 where AP-PERF-buy book Ape
 Intended: ‘Where did Ape buy books?’ (Aldridge 2002: 395)

Whether or not VPs are islands is less clear for Austronesian languages with slightly more permissive extraction patterns. Toba Batak restricts A'-movement to the VP-external argument (55a-b versus 55c-d), but adverbials and indirect objects can surface in clause-initial position without special morphology (56).

¹²In a series of papers, Aldridge characterizes Seediq as morphologically ergative; we reflect her analysis in the glosses.

(55) Toba Batak subject/object extraction asymmetry

- a. Ise mang-ida turiturian?
who AV-see play
'Who saw a play?'
- b. Aha di-ida si-John?
what PASS-see HON-John
'What did John see?' (Lit: What was seen (by) John?)
- c. Mang-ida aha si-John?
AV-see what HON-John
'What did John see?'
- d. *Aha mang-ida si-John?
what AV-see HON-John
Intended: 'What did John see?' (Sternefeld 1995: 6)

(56) Toba Batak adjunct *wh*-questions

- a. Tu ise mang-alean buku si-John?
to who AV-give book HON-John
'To whom did John give a book?'
- b. Songon-dia do di-boto si-John na mang-atuk biang-i si-Mary.
how FOC PASS-know HON-John NA AV-hit dog-DEF HON-Mary
'How does John know that Mary hit the dog?' (Cole and Hermon 2008: 162)

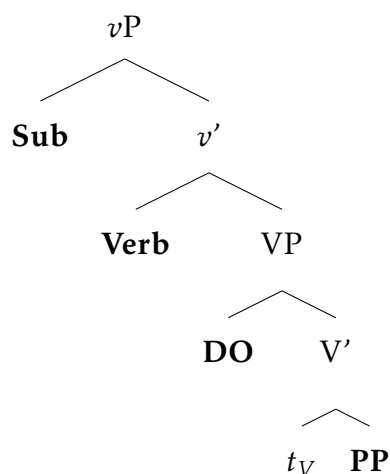
Similarly, in Malagasy and Tagalog, some apparently VP-internal adjuncts, such as instrumental and locative phrases, as well as dative indirect objects, can undergo focus movement without special morphology (Keenan 1976, Paul 2000, Pearson 2005 for Malagasy; Kroeger 1993 for Tagalog).

Thus, in a number of Austronesian languages with a version of the subject-only restriction, low adjuncts fail to behave as though they were stranded by VP-raising. These empirical facts complicate the derivation of the subject-only restriction from VP-raising and the Freezing Principle.

VP-raising and the position of indirect objects and adjuncts

Recall that V1 languages with ditransitives are not expected to have a double-object construction, due to the absence of the underlying verb HAVE. One therefore expects ditransitives to include a direct object and a PP goal (unless some languages have applicatives with a null head introducing the goal argument):

(57) Dative Construction



Dative goal PPs, and all PP arguments generated inside the VP, are predicted to follow the object. The result, assuming that no material leaves the vP prior to its movement to T^0 , is VOXS order. This prediction is borne out in Seediq and Malagasy. Consider the Malagasy examples in (58)¹³

¹³With some verbs, the goal object can appear with a null P^0 . Malagasy marginally allows the order VXOS:

- (1) ?? n-an-ome ny gidro voankazo aho
 PST-AV-give DET lemur fruit 1SG.NOM
 'I gave the lemur some fruit.'

Paul (2000) and Pearson (2001) argue that the above example is a result of scrambling in the vP domain and is not a double-object construction.

(58) Malagasy VOXS

- a. N-an-ome voankazo (ho an') ny gidro aho.
PST-AV-give fruit for OBL DET lemur 1SG.NOM
'I gave some fruit to the lemur.'
- b. M-anasa lamba ho' an ny ankizy ny zazavavy.
PST-AV.wash clothes for OBL DET children DET girl
'The girl is washing clothes for the children.'
- c. N-ameno ny sinibe tamin'ny rano tamin'ny tavoahangy i Soa.
PST-AV.fill DET pitcher with-DET water with-DET bottle Soa
'Soa filled the pitcher with water with the bottle.' (Paul 2000: 35)

However, the order of multiple objects may be difficult to evaluate for two reasons. First, languages may allow *v*P-internal scrambling of arguments—such scrambling has been proposed for Malagasy (Paul 2000), Tagalog (Kroeger 1993; Richards 1993; Wegmüller 1998), Selayarese (Finer 1994), and Tongan (Otsuka 2005). Second, VP-raising can be preceded by the “evacuation” of arguments, which is discussed in the next section.

2.3.2 VP-remnant raising

Remnant raising and clause-final adjuncts

Unlike Malagasy or Seediq, indirect object PPs and low adverbs in Toba Batak follow subjects:

(59) Toba Batak VOSX

- Mang-alean podu guru-i tu dakdanak-i.
AV-give advice teacher-DEF to child-DEF
'The teacher gives advice to the child.' (Keenan 1978: 270)

Cole and Hermon (2008) propose a VP-raising account for Toba Batak, but argue that PPs and adverbs evacuate the VP before it moves to its final position in the clause. As already noted, a moved VP should form an island for the purposes of subextraction, but be able to undergo further movement as a complete unit. Cole and Hermon's proposal

captures the word order facts and accurately predicts that adverbs and PPs pattern with subjects in terms of the relevant extraction asymmetries. For Cole and Hermon, VP-raising is a type of remnant movement whenever adjuncts are involved. Movement of adjuncts out of the VP prior to raising is central to the success of Cole and Hermon's account, but it is achieved by stipulation.

Massam's (2001) account of VP and VP-remnant movement in Niuean faces a similar problem: indirect objects and obliques do not undergo fronting with the VP.

(60) Niuean VOSX

- a. Kua tao he fife e ika he umu.
PFV cook ERG woman ABS fish LOC fire
'The woman cooked the fish on the fire.'
- b. *Kua tao he umu he fife e ika.
PFV cook LOC fire ERG woman ABS fish
Intended: 'The woman cooked the fish on the fire.'

Massam stipulates that indirect objects and obliques are generated higher than VP. Her proposal makes a different prediction than Cole and Hermon's with regard to extraction out of indirect objects and obliques: subextraction should be grammatical if indirect objects and obliques are generated higher than VP, but it should not be possible if they move out of the VP. VP-raising accounts of V1 would benefit from a) further investigation into cross-linguistic variation with regard to where adjuncts are base-generated and under what circumstances they are the targets of syntactic movement and b) more detailed typological work on the options for adjunct extraction in VP-raising languages.

Remnant raising and VSO

A slight modification of the VP-raising account of VOS can capture VSO order: the object moves out of the VP before the VP moves higher into the clause (see 51 for illustration).

In a series of papers on predicate fronting in Niuean, Massam (2000, 2001, et seq.) argues that Niuean instantiates both VP and VP-remnant raising, depending on whether

the V^0 selects a DP or an NP object. When the verb selects a DP object, that object leaves the VP and goes to AbsP for purposes of case checking; this happens prior to VP-raising. Once the VP-remnant moves, the resulting structure is VSO (61a). When the verb selects an NP object, that NP remains inside the VP, because it does not require case. The result is a VOS clause, in which the object pseudo-incorporates into the verb. Note that in the VOS clause in (61b), there is no case on the complex object *ika mo e talo* ‘fish and taro.’¹⁴

(61) Niuean VSO and VOS

- a. Kua kai e mautolu e ika mo e talo he mogonei.
 PFV eat ERG 2PL.EX ABS fish COMTV ABS taro LOC now
 ‘We are eating fish and taro right now.’
- b. Kua kai ika mo e talo a mautolu he mogonei.
 PFV eat fish COMTV ABS taro ABS 2PL.EX LOC now
 ‘We are eating fish and taro right now.’ (Seiter 1980: 70)

Niuean is primarily a VSO language, but its VOS structures provide a window into the general derivation of V1 in this language.

Similarly, the nature of VSO/VOS alternations in Chol is critical in determining how V1 order is generally derived (Coon 2010). Most V1 structures in Chol are VOS, but VSO also arises. Like Niuean, the critical difference between VSO and VOS is that the object in VSO clauses must be a full DP (62a), while the object in VOS clauses must be a bare NP (62b). Note that in (62b), there is no determiner associated with the object.

(62) Chol VSO and VOS

- a. Tyi i-kuch-u-∅ aj-Maria jiñi si’.
 PFV 3SG.ERG-carry-ss-3SG.ABS DET-Maria DET wood
 ‘Maria carried wood.’

¹⁴See Massam (2001) and Chapter 3 for extensive arguments against a genuine incorporation analysis of Niuean VOS. For example, she shows that objects in VOS clauses can be quite complex; consider the coordinated NPs in (61b).

- b. Tyi i-kuch-u- \emptyset si' aj-Maria.
 PFV 3SG.ERG-carry-ss-3SG.ABS wood DET-Maria
 'Maria carried wood.' (Coon 2010: 355)

Following Massam's analysis of Niuean, Coon proposes that object DPs in Chol must move to AbsP. The major difference between Massam's and Coon's analyses is in the motivation of predicate fronting. While Massam invokes the notion of a parameterized EPP that is sensitive to either a [Pred] or a [D] feature, Coon treats predicate fronting as a last resort strategy used for checking agreement features. She provides independent evidence from the nominal domain that phrasal movement is generally employed when head movement is unavailable.

On the question of whether or not VPs behave like islands in VP-raising languages, note that the subject-only restriction found in many Austronesian languages is not found in Chol, or any other Mayan language. On this basis, Chung (2005, 2006) argues that a VP-raising account of Tzotzil, a language closely related to Chol, would be difficult to defend, because there are no restrictions on the extraction of objects out of a moved VP.

Coon (2010) observes that the word order and extraction patterns in Tzotzil and Chol appear similar with regard to the factors that condition VSO and VOS alternations. However, she argues that object extraction is not a concern for a predicate fronting account, at least for Chol. As (63) shows, object extraction is grammatical, and is in fact required in object *wh*-questions:

(63) Chol object *wh*-questions

- a. Chuki tyi i-mäñ-ä a-chich?
 what PFV 3SG.ERG-buy-ss 2SG.POSS-sister
 'What did your sister buy?'
- b. *Tyi i-mäñ-ä chuki a-chich?
 PFV 3SG.ERG-buy-ss what 2SG.POSS-sister
 Intended: 'What did your sister buy?' (Coon 2010: 368)

Assuming that *wh*-words are full DPs, they must move from their VP-internal base-generated position into AbsP for case-checking purposes. Therefore, by the time VP raises, the *wh*-object has already evacuated the VP. As such, it remains available for *wh*-extraction. Thus, while the subject-only restriction in Austronesian can support a VP-raising account, it is not a precondition of the VP-raising account.

VP-raising and VSO/VOS alternations

The mechanism involved in VP- and VP-remnant movement captures the tight connection between VSO and VOS that exists for many languages, especially those in the Austronesian and Mayan families (e.g., Carnie and Guilfoyle 2000; Chung 2006). Yet, the patterns of VSO/VOS alternations in the languages to which XP-movement has been successfully applied are quite straightforward. Pre-theoretically, Niuean VSO objects are case marked, while VOS objects are not, and Chol VSO objects are marked with a determiner, while VOS objects are not. In other languages, VSO/VOS alternations are not so easy to characterize.

Kroeger (1993) argues that Tagalog word order variation is the result of competition between different factors, including thematic role and grammatical function. In brief, the argument with the highest thematic role should be closest to the verb, and the argument with the highest grammatical function should be farthest from the verb. In active voice clauses, the argument with the highest thematic role and the argument with the highest grammatical function are one and the same. According to Kroeger, the competition between these two requirements explains the high degree of word order variation in active clauses. In non-active clauses, there is no conflict, and hence, less word order variation. Bauer (1993) also reports that word order variation in Māori is the result of competition between different factors, including information structure, thematic role, and weight.

VSO/VOS alternations do not need to involve competition to provide difficulties for a VP-remnant approach, however. The features that influence word order may not be bi-

nary. Dayley (1985) argues that it is necessary to distinguish between definite, indefinite, and unmarked arguments in order to predict word order in Tz'utujil. In other languages, a particular feature will affect word order differently depending on the argument it applies to. For example, in both Tzeltal and Wasteko (Norman and Campbell 1978), two animate arguments will surface in VSO, as will two inanimate arguments. If the subject is more animate than the object, however, the word order is VOS.

Overall, VP(-remnant) raising accounts of V1 have been quite successful. Such accounts offer a particularly convincing analysis for Niuean and Chol, in part because of the simplicity of the premise: objects either do or do not remain in situ VP-internally when the VP moves. Of course, the nature of the VSO/VOS alternation in these languages is also quite straightforward. It is difficult to imagine how this account could be gracefully extended to languages in which the VSO/VOS alternation involves competition, a relative scale, or any characteristic of the subject.

Even so, it is easier to motivate the evacuation of objects than it is to motivate the evacuation of other VP-internal elements. Objects may leave the VP for case-checking purposes, but adverbials and PPs do not have licensing requirements (see Chung 2006). Thus, one of the main challenges to the VP(-remnant) raising account lies in motivating structures where non-object constituents (adverbials, PPs) follow the subject, as in Toba Batak (59).

2.4 Head movement

The V^0 -raising approach derives V1 word orders from a base-generated SVO structure via head movement of the verb to a position in the clause that is higher than the subject. The most extensive research on V^0 -raising is work on Irish (e.g., Carnie, Harley and Pyatt 1994; Guilfoyle 1990; McCloskey 1991, 1996, 2001, 2005; Noonan 1994), but V^0 -raising accounts are popular and have been proposed for other Celtic languages, in-

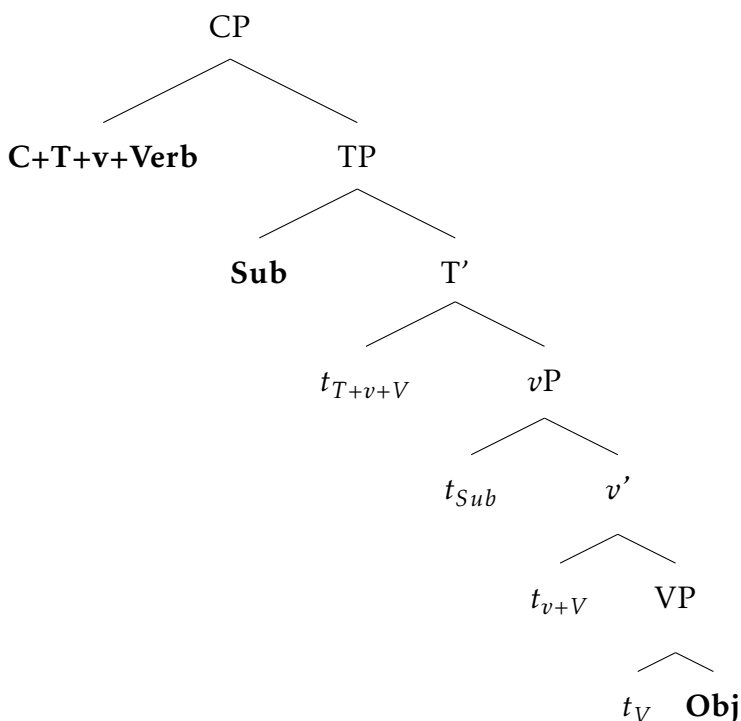
cluding Welsh and Breton (e.g., Sproat 1985; Clack 1994; Sadler 1988; Tallerman 1998), as well as Afroasiatic languages including Arabic and Berber (Fassi Fehri 1993; Kaplan 1991; Choe 1987; Ouhalla 1994).

V⁰-raising accounts for Austronesian languages include Guilfoyle, Hung and Travis (1992) for Cebuano; Woolford (1991) for Chamorro and Niuean; Pearce (2002) and Waite (1989) for Māori; Aldridge (2004), Guilfoyle, Hung and Travis (1992), Rackowski (2002), Richards (2000), Rackowski and Richards (2005) for Tagalog; Custis (2004) and Otsuka (2000, 2005) for Tongan.

2.4.1 Deriving VSO via V-raising

The basic premise of the V⁰-raising approach is realized in slightly different ways by different researchers. For example, accounts differ on whether V⁰ moves to CP or only to IP. The account in which V⁰ moves to C⁰ is referred to as the weak-V2 approach (Clack 1994; Emonds 1980; Otsuka 2005), as illustrated below.

(64) V⁰-raising



An alternative view is that V^0 only moves as high as IP/TP (e.g., Aldridge 2004; Rackowski 2002; Richards 2000; Sproat 1985; McCloskey 1996).

V-raising and ellipsis

Important evidence for V^0 -raising analyses comes from ellipsis, especially for Celtic languages (e.g., McCloskey 1991, 2005).¹⁵ The Irish dialogue below illustrates that ellipsis affects all postverbal elements (65b-65c).

(65) Irish ellipsis

- a. Sciob an cat an teireaball de-n luch.
snatched the cat the tail from-the mouse
'The cat cut the tail off the mouse.'
- b. A-r sciob?
Q-PST snatched
'Did it?' (lit: snatched?)
- c. Creidim gu-r sciob.
believe.1SG C-PST snatched.
'I believe it did.' (lit: I believe snatched.) (McCloskey 2005: 157)

McCloskey (1991) argues that the mechanism involved in the Irish ellipsis examples and their English counterparts in (65) is comparable, despite their different surface appearance. He suggests that ellipsis targets the same functional projection for both languages. In Irish, the lexical verb is located above the ellipsis site, but the subject and object are below it; in English, subjects and auxiliaries are located in roughly the same position as the lexical verb in Irish, i.e., above the ellipsis site, while the English lexical verb and object remain lower and are not pronounced.

Ellipsis has played less of a role in the analysis of V1 clauses in Austronesian. Instead, arguments for V^0 -raising in Austronesian tend to focus on verb-adjacent particles and

¹⁵See also Goldberg (2005) for related work on ellipsis in Hebrew.

adverbs. This is the topic of the next section.¹⁶

V-raising and particles

VOS structures with intervening adjuncts or functional heads between the verb and the object lend themselves to a V^0 -raising account. Holmer (2005) argues that the position of adverbial clitics in Tagalog relative to the verb is best explained by V^0 -raising, and suggests that the distinction between final particles and second-position particles is a good diagnostic to determine whether a language raises V^0 or VP.

On the assumption that the verb and object form a constituent at some point in the derivation, raising V^0 into a position adjacent to the adverbial clitic is the most expedient way to predict the surface order in syntax. Hypothetically, it is also possible that the surface position of this class of clitics is driven by phonological considerations. However, there are other non-clitic adverbs in Tagalog, such as *lagi* ‘always,’ that can surface immediately after the verb. These adverbs are not phonologically dependent on the verb, because they can surface clause-initially as well (Rackowski 2002, Sabbagh 2014).

Otsuka (2002, 2005) provides an argument for a V^0 -raising account of Tongan based on distributional differences between clitic pronouns and case-marked arguments. Clitic subjects obligatorily precede the verb, while independent pronominal subjects are case-marked and follow the verb.

(66) Tongan clitic and independent subject pronouns

- a. Na’a ne tala-ange ‘a e talanoa ki he tangata.
 PST 3SG.CL tell-DIR.3 ABS the story to the man
 ‘He told the story to the man.’
- b. Na’e tala-ange ‘e ia ‘a e talanoa ki he tangata.
 PST tell-DIR.3 ERG 3.SG ABS the story to the man
 ‘He told the story to the man.’ (Otsuka 2005: 71)

¹⁶But see Richards (2003) for an argument from ellipsis that V^0 raises out of VP in Tagalog.

Otsuka argues that EPP bears a [D] feature in Tongan, which triggers head movement of the subject clitic to T^0 . Subject clitics always precede the verb, because the verb moves from V^0 to T^0 to C^0 , picking up any clitics in T^0 along the way. In contrast, case-marked subject DPs move to the *specifier* of TP. The verb moves over case-marked subjects on the way to C^0 , resulting in canonical VSO order. If Tongan were VP-raising, there would be no syntactic explanation for the fact that subject clitics precede the verb, while case-marked subjects follow it.

A second piece of evidence that Otsuka presents pertains to the nature of VSO/VOS alternations in Tongan and Niuean. Like Niuean, Tongan is VSO/VOS-alternating. Unlike Niuean, Tongan does not have pseudo noun incorporation, but has a more restricted process, which Otsuka analyzes as lexical compounding (but see Ball 2008 for a different analysis). Therefore, VOS can arise in Tongan when the object is case marked. In the absence of pseudo noun incorporation, the alternation between VSO and VOS is accounted for by scrambling, which is discussed in the next section.

2.4.2 VOS in V-raising accounts

Scrambling is the most common way of deriving VOS in VSO languages under a V^0 -raising analysis; such accounts have been proposed for Tongan (Otsuka 2002) and Tagalog (see Rackowski 2002; Richards 2000; Rackowski and Richards 2005).¹⁷

Tongan objects can bear case in both VSO and VOS structures.

(67) Tongan VSO/VOS

- a. Na'a tamate'i 'e Tēvita 'a Kōlaiate.
PST kill.TV ERG David ABS Goliath
 'David killed Goliath.'

¹⁷See Billings (2005), Guilfoyle, Hung, and Travis (1992) and Sabbagh (2005, 2014) for alternative perspectives on VOS/VSO alternations in Tagalog.

- b. Na'e tamate'i 'a Kōlaiate 'e Tēvita.
 PST kill.TV ABS Goliath ERG David
 'David killed Goliath.' Tongan (Churchward 1953: 15)

As in many of the languages discussed in this chapter, VSO/VOS alternations in Tongan are driven by a variety of factors. For example, heavy constituents invariably appear to the right, as is shown for subjects in (68a) and for objects in (68b):

(68) Tongan VSO/VOS with heavy constituents

- a. 'Oku 'ene 'a e pepe 'e he ta'ahine 'oku malimali.
 PRS tickle ABS DET baby ERG DET girl PRS smile
 'The smiling girl is tickling a/the baby.'
- b. 'Oku 'ene 'e he ta'ahine 'a e pepe 'oku ne puke 'a e me'a va'inga.
 PRS tickle ERG DET girl ABS DET baby PRS RP hold ABS DET toy
 'The girl is tickling the baby who is holding a toy.'

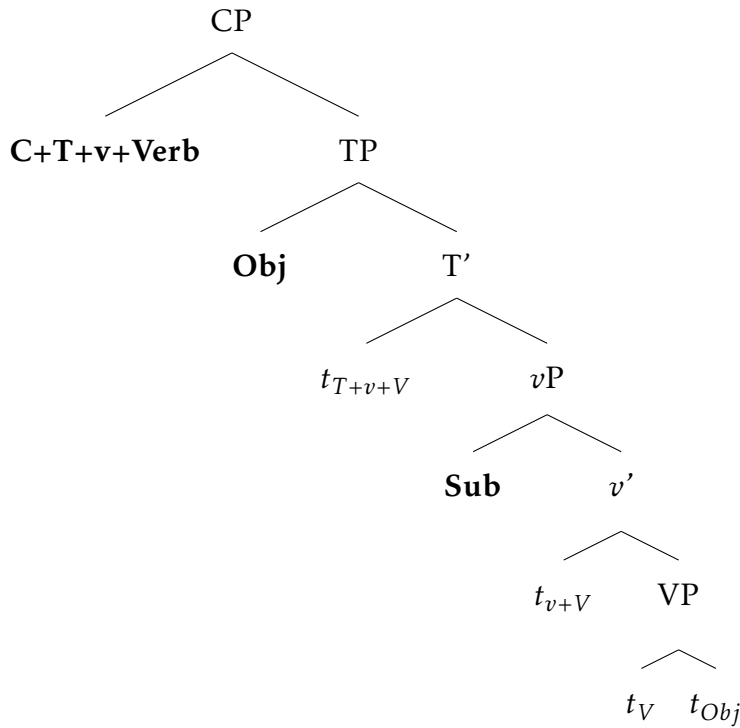
Several researchers have also noted that the alternation between VSO and VOS is determined by information-structural considerations. Given, topic-like information appears closer to the verb, whereas new, focus-like information is placed to the right (Otsuka 2002; Custis 2004: Ch. 2; Ball 2008: 56-57).¹⁸

Researchers vary in their approach to information-structural factors; some accounts place such factors in syntax, while others put the explanatory burden on PF or more general non-syntactic factors. Among syntactically-oriented accounts, Otsuka (2002) and Richards (1993) offer derivational approaches to VSO/VOS scrambling. Both authors treat scrambling as an A'-operation.

Following Miyagawa's (2001) account of scrambling in Japanese, Otsuka (2002) proposes that EPP on T⁰ has an optional focus feature, which attracts the relevant DP to its specifier. Recall that for Otsuka, V⁰-raising is V⁰-T⁰-C⁰, which is how the verb ultimately precedes DPs in spec,T.

¹⁸Similar information-structural considerations are given for the VSO/VOS-alternations in Maori (Bauer 1993: 54-64) and Samoan (Mosel and Hovdhaugen 1992: 448-451).

(69) Scrambling VOS



Richards (1993) argues for an A'-scrambling account of VSO/VOS word order in Tagalog, based on the observation that different linear orders do not influence anaphor binding (70) or weak crossover (71) (See also Richards 2013).

(70) Tagalog scrambling and anaphor binding

- a. T<um>ingin ang lalaki sa sarili niya sa salamin.
 <PFV.AV>look ANG man OBL self his OBL mirror
 'The man looked at himself in the mirror.'
- b. T<um>ingin sa sarili niya ang lalaki sa salamin.
 <PFV.AV>look OBL self his ANG man OBL mirror
 'The man looked at himself in the mirror.' (Richards 2013:414)
- c. *B<um>atikos ang mga artikolo tungkol sa kanyang sarili_i sa pangulo_i.
 <PFV.AV>criticize ANG PL article about OBL 3.SG-LK self OBL president
 ('The articles about herself_i criticized the president_i.')

- d. *B<um>atikos sa pangulo_i ang mga artikolo tungkol sa kanyang
 <PFV.AV>criticize OBL president ANG PL article about OBL 3.SG-LK
 sarili_i.
 self

Intended: 'The articles about herself_i criticized the president_i.'

(Richards 1993:33)

(71) Tagalog scrambling and weak crossover

- a. Nagmamahal ang bawat ama_i sa kanyang_i anak.
 AV-love ANG each father OBL his/her-LK child
 'Every father_i loves his_i child.'
- b. Nagmamahal sa kanyang_i anak ang bawat ama_i.
 AV-love OBL his/her-LK child ANG each father
 'Every father_i loves his_i child.'
- c. *Nagmamahal ang kanyang_i ama sa bawat anak_i.
 AV-love ANG his/her-LK father OBL each child
 Intended: 'His/her_i father loves every child_i.'
- d. *Nagmamahal sa bawat anak_i ang kanyang_i ama.
 AV-love OBL each child ANG his/her-LK father
 Intended: 'His/her_i father loves every child_i.' (Richards 2013: 416)

Without the addition of some independent analytical component to account for postverbal word order, V^0 -raising captures only the derivation of VSO. It therefore works most straightforwardly for rigidly VSO languages. For VSO/VOS-alternating languages, a thorough understanding of the factors that determine variable postverbal word order is still needed.

2.5 V1 and the EPP

Sections 2.3-2.4 demonstrated that both V^0 - and VP-raising accounts commonly invoke the EPP to motivate movement. In SVO languages, EPP is commonly assumed to be a [D] feature associated with T^0 , which triggers the overt movement of a DP into spec,T.

Proponents of V^0 - and VP-raising analyses assume that the EPP is universal and motivate V^0 /VP movement by modifying the way in which a language satisfies the EPP. A notable exception to this trend is McCloskey (1996), who challenges the universality of the EPP, arguing that Irish has actual subjectless sentences rather than sentences with null expletives. Modifications of the EPP to accommodate V1 target either the type of element that can satisfy the EPP, or the movement-triggering feature associated with T^0 .

Alexiadou and Anagnostopoulou (1998) propose that EPP-[D] can be satisfied by the verb in some languages, which is possible when D-features of the sentential arguments are reflected in agreement on the verb. This idea has been explored in reference to Bantu and Germanic as well as V1 languages (see also Biberauer 2003; Carstens 2005; Massam and Smallwood 1997; Richards and Biberauer 2005). In a conceptually related proposal, Coon (2010) suggests that there is a general requirement that V^0 raise to T^0 and that VP fronting is an alternative way to satisfy the EPP.

Other researchers have proposed modifications to the nature of the movement-triggering feature on EPP. Pearson (2001) proposes that the VP can be attracted to spec,T to satisfy a [T] feature; Davies and Dubinsky (2001) argue that a [V] feature on T^0 attracts the verb; Massam (2001) proposes that the relevant feature is [Pred]. This last proposal has been quite popular in the V1 literature, as an EPP-[Pred] on T^0 nicely captures the generally predicate-initial nature of so many V1 languages (Aldridge 2002, Oda 2005).

The ease with which V^0 - and VP-raising accounts are formally motivated is reflected in the variety of proposals just discussed. This is not surprising; since T^0 's movement-triggering feature is never independently visible, any feature associated with the moved constituent—[PRED], [V], [ϕ], etc.—could conceivably be the feature that satisfies the EPP. Thus, from the perspective of V1 languages, the EPP is a rather unwieldy, opaque, theory-internal device that formalizes cross-linguistic variation according to the major constituent that surfaces in initial position. This is hardly explanatory. While the evidence for the different accounts of V1 discussed in this chapter is sound, their motivation

is only as solid as the motivation for the EPP. Similar sentiment has been expressed elsewhere in the V1 literature (Chung 2006, Cole and Hermon 2008).

Richards (2013b) seeks to derive the EPP from principles of phonological well-formedness via a condition he calls *Affix Support*.

- (72) *Affix Support*: If any head is an affix, there must be a metrical boundary in the direction in which it attaches within the maximal projection of the affix.

Richards departs from tradition by proposing that *Affix Support* triggers movement in narrow syntax. This proposal relates to the derivation of V1 in two important ways: first, *Affix Support* provides an alternative explanation for why some languages are V1. Second, if successful, Richards' proposal demotivates the V⁰- and VP-raising accounts of V1 that appeal to EPP parameterization.

Affix Support makes slightly different predictions for head-initial and head-final languages; here, the discussion is restricted to head-initial languages, as V1 languages reliably belong to this type.

2.5.1 Satisfying *Affix Support*

Where tense is suffixal, *Affix Support* must be satisfied by a metrical boundary to the left of the suffix. If a language has word-internal metrical boundaries (e.g., Oltra-Massuet and Arregi 2005 for Spanish), then such a boundary within the verb satisfies the condition on affixes. In (73) and subsequent examples, the tense affix is shown in bold and the relevant metrical boundary is demarcated with a bracket.

- (73) Spanish

Aparec]-**ió** un hombre.
arrive-PST INDEF man
'A man arrived.'

In other cases, metrical structure is only assigned after a word is morphologically complete. Richard (2014) assumes that the syntax can only recognize a verb as morphologically complete after a non-affixal head, such as C^0 , is merged. Therefore, in a language like English, a metrical boundary in the maximal projection of TP would satisfy *Affix Support* in the absence of a word-internal metrical boundary.

(74) A man] arrive-**d**.

Richards' theory predicts that languages with suffixal T^0 are verb-medial, unless a word-internal metrical boundary can satisfy *Affix Support*. It also predicts that languages with free-standing or prefixal T^0 will be V1: the condition on affixes does not apply to instances of free-standing T^0 , and prefixal T^0 is supported by material that follows the verb. Typologically, this works out quite nicely, although it is hard to rule out the possibility that this result follows from the fact that V1 languages are strictly head-initial in all domains. If tense is prefixal, *Affix Support* must be satisfied by a metrical boundary to the right of the suffix. Examples are given from Tz'utujil and Tagalog.

(75) Tz'utujil *Affix Support* and prefixal tense

X-Ø-pi [jun aachi.
COM-3.SG.ABS-COME INDEF man
'A man came'

(76) Tagalog *Affix Support* and prefixal tense

d-**um**-ating [t_i ang lalaki $_i$.
<PFV.AV>arrive ANG man
'The man arrived.'

Note that the boundary that satisfies *Affix Support* in (76) is adjacent to t_i , a syntactic object without phonological material. At the point in the derivation when TP is formed, *ang lalaki* satisfies *Affix Support in situ*, but the syntax does not know that *ang lalaki* will move into a specifier higher than TP (presumably CP). Because examples like (76) are

grammatical, Richards posits that *Affix Support* is satisfied at the point in the derivation when TP is under construction.¹⁹ Therefore, the syntax has to know where metrical boundaries are created generally, without regard for whether a particular syntactic object will actually be pronounced.²⁰

2.5.2 *Affix Support* and V1

Richards' conception of the EPP is traditional in the sense that a language is said to have EPP effects when some sentential constituent, normally the subject, precedes the verb. He derives EPP effects with a universal condition on affixes; however, the way in which V1 languages satisfy this condition means that they do not test positive for EPP effects. The most common motivation for V1 derivations—the universality of EPP effects—is thus incompatible with Richards' conception of the EPP. This is not necessarily an undesirable result, for reasons discussed at the beginning of this section.

Recall, however, that the evidence for different V1 derivations is quite impressive. Richards' theory does not say anything about how the verb (or entire VP) first arrives in a position to the left of the subject; his theory only seeks to explain why verbs in some languages are allowed to *stay* in a position to the left of the subject at the point in the derivation when TP is under construction. *Affix Support* is thus compatible with the syntactic movement associated with the various accounts of V1 we have discussed, despite being incompatible with the common motivation for that movement.

Richards' theory gives both syntacticians and phonologists a great deal to debate. Is syntax sensitive to phonological well-formedness? Can null elements be said to have metrical boundaries? When does phonological structure begin to take shape? Yet, the proposal pushes the V1 literature in a positive direction: it points out that the real con-

¹⁹Richards (2013b) makes a similar point with English constructions where *Affix Support* is satisfied redundantly, e.g., *Affix Support* triggers movement, and then something else merges to the left of the suffix satisfying *Affix Support* a second time.

²⁰See also Richards' (2013b) discussion of subject drop in Finnish.

cern for V1 is not the fact that the verb, rather than the subject, surfaces in initial position, but that verb (or VP) raises at all.

2.6 V1 without VP constituency

The V1 analyses discussed thus far preserve VP constituency. This section addresses two approaches that do not maintain the unique constituency of the verb and the object. The flat structure approach applies ternary branching that results in the verb forming a constituent with both arguments. The pronominal argument hypothesis proposes that lexical nominals are unselected modifiers that do not form a constituent with the verb.

2.6.1 V1 and flat structure

The flat-structure approach argues that V1 is the result of ternary branching in the verbal domain. This approach was most popular in the 1970s-80s. The next decade brought a wealth of research demonstrating that, even for VSO languages where the verb and the object are not linearly adjacent, the VP is still a constituent to the exclusion of the subject. Nonetheless, one can still find flat structure accounts of V1, particularly within the Lexical/Functional framework (e.g., Carnie 2005; Kroeger 1993; Sells 2000).

Carnie (2005) maintains that, while functional structure can account for subject/object asymmetries in Irish, a Chomskyan view of Irish clause structure cannot account for differences between verbal and non-verbal clauses. In regular clauses, the supposed complement of the verb, its object, cannot appear adjacent to the verb: there is no VOS in Irish. In non-verbal clauses, however, the nominal predicate can appear in initial position with or without its complement. Carnie proposes that verbal predicates project only to the head level in Irish, while nominal predicates project to the head level or to the phrase level.

2.6.2 V1 and the Pronominal Argument Hypothesis

Jelinek's (1984) Pronominal Argument Hypothesis (PAH) fosters another approach to V1 languages that does not assume VP constituency (see also Baker 1996). The PAH argues that, for some languages, agreement markers are a verb's *actual* arguments, and lexical nominals are unselected modifiers that are co-indexed with those arguments. Many V1 languages display properties of pronominal argument languages:

- (77) Properties of pronominal argument languages (Baker 1996; Jelinek 1984)
 - a. Flexible word order
 - b. Subject and object agreement
 - c. Subject and object drop
 - d. Lack of case marking and determiners on nominal

Under one construal of flexible word order, the order of adjuncts is more tightly regulated than the order of arguments. The reliable presence of agreement markers (b) and the optional occurrence of free-standing subjects and arguments (c) follow from the fact that arguments (here, agreement markers) are obligatory elements of the clause, while modifiers (here, lexical nominals) are optional. Finally, the lack of case marking and overt determiners results from the fact that lexical elements in pronominal argument languages are not selected by the verb. Pronominal-argument analyses have been articulated for V1 languages (e.g., Alderete 1998 and Aranovich 2013 for Fijian; Miller 1988 and Kroeger 1993 for Tagalog; Jelinek 1984, 2000 for Straits Salish). In the case of Fijian, the (partial) pronominal-argument analysis has the positive outcome of providing an explanation for the otherwise-surprising asymmetry between pronouns and proper nouns as compared to common nouns: common nouns, modificational in nature, can be incorporated and dislocated, but pronouns, true arguments of the verb, must surface inside the VP. While this type of analysis has been underexplored in the Austronesian and Mayan literature, three potential challenges arise.

First, variation in word order does not necessarily indicate flexible word order. As demonstrated in 2.2.1 and 2.3.2, patterns in word order variation are often quite constrained, even when they are complex.

Second, when agreement markers are taken to be arguments, Mayan and Austronesian languages become SVO and OSV. Languages in these families sometimes have two agreement prefixes, but never two agreement suffixes. More specifically, neither ergative nor nominative markers follow the verb. The idea that the PAH ‘turns’ V1 languages into SVO and OSV languages is illustrated with Chol (78a) and Q’anjob’al (78b).

(78) Chol V1 as ‘SVO’ and Q’anjob’al as ‘OSV’

- a. Ta’ [y]_S-[il-ä]_V-[yety]_O *pro pro*
PFV 3.ERG-SEE-TV-2.ABS
‘(She/he) saw (you).’
- b. Max-[ach]_O [y]_S-[il-a’]_V *pro pro*
PFV-2.ABS 3.ERG-SEE-TV
‘(She/he) saw (you).’

If the true word order in Mayan and Austronesian were SVO/OSV, it would be necessary to conclude that either (i) the typological properties of (apparent) V1 languages could not be derived from deeper grammatical principles associated with verb-initiality, or (ii) the pronominal argument languages in the Austronesian and Mayan families only coincidentally share the characteristics of ‘true’ V1 languages. Finally, pronominal arguments and clitic-doubling share many superficial properties; care should be taken when distinguishing between the two.

2.7 V1 at the syntax-phonology interface

Section 2.2 identified two principles of generative syntax that are particularly relevant to understanding the right-branching account of V1. The first was the *Narrow syntax assumption*:

- (79) *Narrow syntax assumption*: The major constituents of the hierarchical structure achieve their final linearization in narrow syntax.

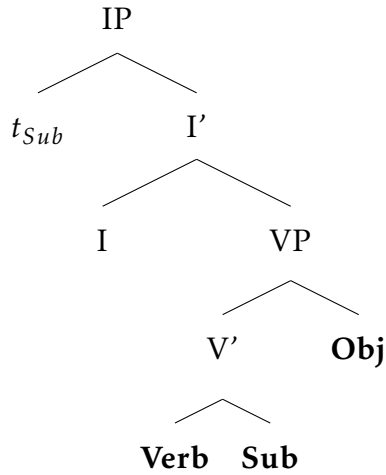
The statement in (79) is at least tacitly assumed by all of the proposals in Sections 2.2-2.6. This section addresses a number of recent proposals that challenge the exclusivity of syntax in determining constituent order by arguing that, in certain cases, phonological well-formedness determines the outcome of linearization.

Two recent proposals in the V1 literature share a common objective: to replace a current syntactic lowering account with an analysis based on prosodic well-formedness. In the first, Sabbagh (2014) recasts the subject lowering account of V1 as a prosodic phenomenon. In the second, Bennett et al. (to appear a, b) offer a prosodic account of object postposing in Irish, which connects to the recurring theme of the order of postverbal elements in verb-initial languages. Both of these proposals represent a larger trend to explore the potential of the syntax-phonology interface for solving standing problems in word order variation.

2.7.1 Subject lowering

In subject lowering accounts of V1, the subject adjoins to a projection of the verb after lowering from spec,I:

(80) Subject lowering



Subject lowering has been proposed for Berber (Choe 1987), Chamorro (Chung 1990, 1998), and Tagalog (Sabbagh 2005, 2014). Evidence in support of this analysis comes from coordination. The same position(s) available to the subject in a single-VP structure, i.e. VSO/VOS, are also available in coordinated structures. Interestingly, in both Chamorro and Tagalog, subjects that are shared by multiple conjuncts can surface in any conjunct. This is shown schematically in (81) with a few actual examples from Tagalog illustrating the different possibilities in (82):

(81) Chamorro and Tagalog coordination possibilities:

[Verb (SUB) OBJ (SUB)] coor [Verb (SUB) OBJ (SUB)]

(82) a. Tagalog coordination

Naka-kita ng kalansay at na-takot ang bawa't babae.
 AV.PERF-see NG skeleton and NAV.PERF-afraid ANG each woman
 'Each woman saw a skeleton and got scared'

b. Hindi p<um>unta sa tindahan o b<um>ili ang kapatid ko ng bigas.
 NEG <PFV.AV>go OBL store or <PFV.AV>buy ANG brother 1.SG NG rice
 'My brother did not go to the store or buy any rice.'

- c. Naka-kita ang bawa't babae ng kalansay at na-takot.
 AV.PERF-see ANG each woman NG skeleton and NAV.PERF-afraid
 'Each woman saw a skeleton and got scared' (Sabbagh 2014: 49)

Proponents of subject lowering argue that the subject must be able to scope above the coordinate structure while surfacing in a lower position in the clause; therefore the subject must be associated with a position higher than the position in which it is pronounced. Subject lowering has been met with skepticism in part because it is difficult to motivate.

Subject lowering as WEAK START

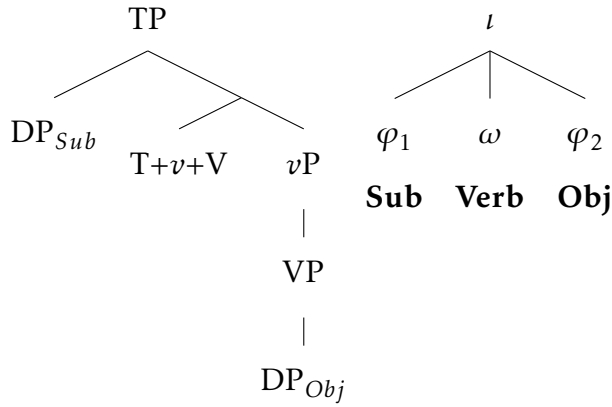
Sabbagh (2014) proposes a prosodic constraint WEAK START to help motivate a subject-lowering account of Tagalog V1.²¹

- (83) WEAK START (Sabbagh 2014): A prosodic constituent begins with a leftmost daughter, which is no higher on the prosodic hierarchy than the constituent that immediately follows.

Sabbagh's proposal is framed in Match Theory (Selkirk 2011), which states that clauses (CP and TP) with illocutionary force correspond to intonational phrases (ι), XPs correspond to phonological phrases (φ), and X^0 s correspond to phonological words (ω). The syntax-prosody mapping of a ditransitive clause before subject lowering is shown in (84). The syntactic tree shows only the information that will receive prosodic structure. Thus, traces are not shown, because constituents without phonological exponents are not prosodified. Also note that, while XPs correspond to the prosodic categories ι and φ , and X^0 s correspond to the prosodic category ω , X' is not represented in the structure.

²¹Sabbagh also connects the principle of WEAK START to an apparently unrelated problem in the domain of *wh*-word order in Tagalog.

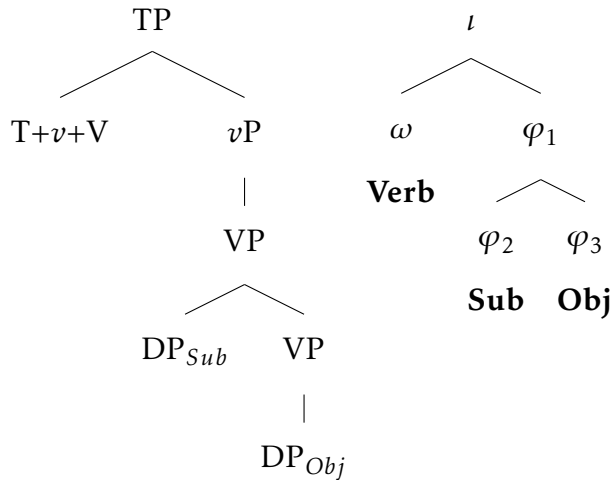
(84) Syntax-prosody mapping before subject lowering



Sabbagh proposes that structures like the one in (84) violate WEAK START, which regulates the order in which different members of the prosodic hierarchy (i.e. $\iota > \varphi > \omega$) can surface within a single prosodic phrase.

In effect, the prosodic structure in (84) is problematic because the subject DP (φ_1) maps onto a prosodic constituent that is higher on the prosodic hierarchy than the verb (ω), which immediately follows the subject. In order to repair the prosodic structure in (84), the subject adjoins to VP, resulting in the well-formed prosodic structure in (85).

(85) Syntax-prosody mapping with subject lowering



In (85), the verb (ω) maps onto a prosodic constituent that is lower on the prosodic hierarchy than the constituent that immediately follows (φ_1).

Sabbagh's proposal has two primary strengths. First, he is able to connect subject lowering to a seemingly independent phenomenon, the relative order of *wh*-phrases and complementizers. Second, this proposal eliminates the aforementioned theoretical challenge of motivating syntactic lowering.

One might argue, however, that Sabbagh's proposal simply moves the problem of motivation from the domain of syntax into the domain of phonology. The principle behind WEAK START, that the beginning of a phonological constituent is a relatively weak position, is rather exceptional in the phonological literature on positional effects. WEAK START is the counter-constraint to STRONG START (Selkirk 2011), which prefers prosodic constituents whose first subconstituent is not lower-ranked than the one that immediately follows it. STRONG START fits naturally into a group of well-documented initial position phenomena found at all levels of the prosodic hierarchy (initial strengthening, initial syllable prominence, positional neutralization, etc.) By virtue of association with these other phonological principles, the theoretical motivation for STRONG START is less vulnerable than that of WEAK START.

Sabbagh's analysis also raises an important issue: more primary prosodic data is needed to support prosodic accounts of phenomena traditionally handled in the domain of syntax. Due to lack of data, Sabbagh is forced to assume a number of prosodic characteristics in Tagalog, such as unary and ternary branching. Match Theory predicts unary and ternary branching in the prosodic domain of some languages, but many languages strongly prefer binary structures.²² Non-binary branching is essential to Sabbagh's analysis: without ternary branching, the environment that conditions lowering (as in (84)) would not arise. Of course, it could be the case that the prosodic structure of Tagalog includes non-binary branching, but given the cross-linguistic tendency to favor binary structures, this should be independently verified.

²²See Inkelas and Zec (1990), Ito and Mester (1992, 2007, 2009), Selkirk (2000, 2011) for a discussion of binarity and prosodic constituents.

2.7.2 Pronoun postposing in Irish

Bennett et al. (to appear a, b) argue that **STRONG START** is the root of a phenomenon in Irish known as pronoun postposing, where prosodically weak object pronouns, and weak subject pronouns in small clauses surface to the right of their canonical positions. The possibilities for object postposing are shown in (86).

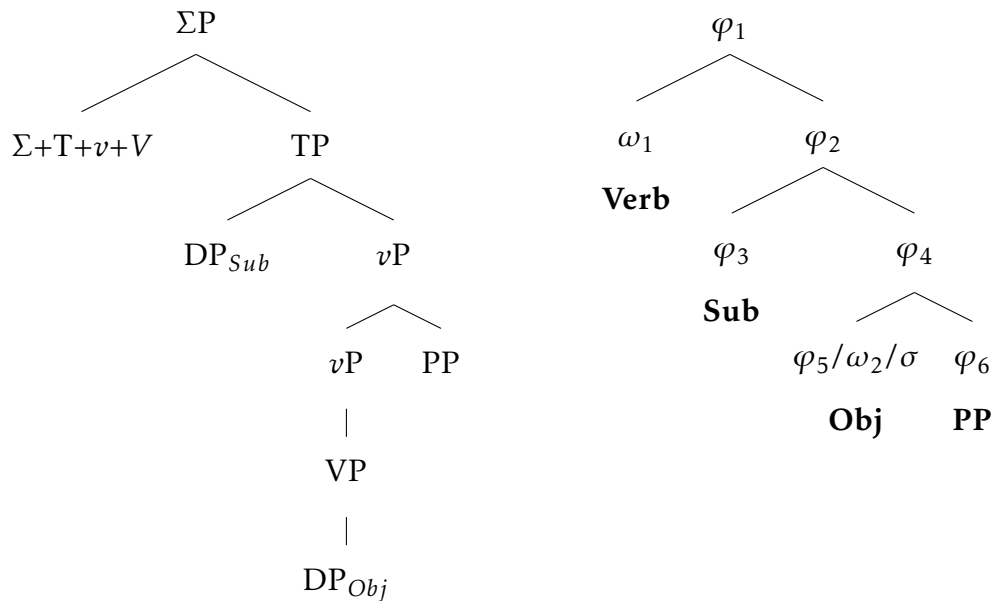
(86) [Verb SUB (PRO_{OBJ}) XP (PRO_{OBJ}) YP (PRO_{OBJ}) ZP (PRO_{OBJ})]

In addition to the canonical object position and clause-final position, a number of intermediary positions are available to Irish object pronouns as well. This is reminiscent of the variable position of subjects in Tagalog and Chamorro discussed above. For a discussion of the challenges that face syntactic accounts of pronoun postposing in Irish, see Bennett et al. (to appear a)

Pronoun postposing as **STRONG START**

In accordance with Match Theory (Selkirk 2011), the syntax-prosody mapping of Irish VSOX is given in (87).

(87) Syntax-prosody mapping of Irish VSOX



Non-branching prosodic structures in Irish surface as the most minimal prosodic unit (Elfner 2012). This means that if the object in (87) has three possible prosodic forms: if it were a full DP (D^0 and NP) it would surface as a phonological phrase (φ_5); as a strong pronoun, it would be a phonological word (ω_2); as a weak pronoun, it would be only a syllable (σ). In the case of a weak pronoun, the structure violates **STRONG START**.

- (88) **STRONG START** (Bennett et al. to appear a, based on Selkirk 2011): Prosodic constituents above the level of the word should not have at their left edge an immediate sub-constituent which is prosodically dependent. For our purposes here, a ‘prosodically dependent’ constituent is any prosodic unit smaller than the word.

One way to avoid the violation of **STRONG START** is to right-adjoin the weak pronoun to a phonological phrase, where it would surface as the rightmost constituent.

In comparison to other V1 languages, Irish has been the topic of substantial empirical and theoretical study at the syntax-phonology interface (Blankenhorn 1981; Bondaruk 2004; Dalton and Ní Chasaide 2005; Elfner 2012). Thus, Bennett et al. are able to provide a prosodic account of pronoun postposing that is well supported by a general understanding of prosodic constituent structure in Irish. For example, Elfner (2012) demonstrates that the constraint **BINARITY** is high-ranked in Irish by investigating phonological structures that are non-isomorphic with the corresponding syntactic structures:

- (89) **BINARITY**: Optimal prosodic constituents include exactly two immediate constituents.

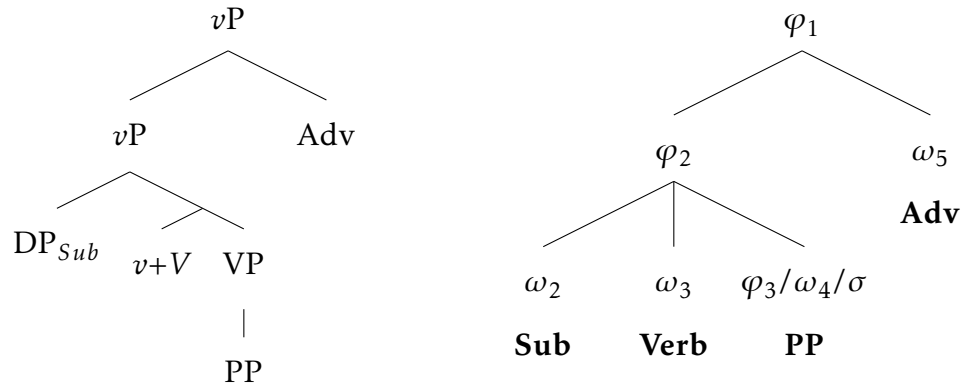
The high ranking of **BINARITY** in Irish helps Bennett et al. connect their analysis of object postposing to related phenomena. In general, prepositional phrases consisting of a preposition inflected for gender, number and person can postpose in the same way as weak object pronouns:

(90) Irish PP postposing in small clauses

- a. Labharfaidh mé leis ar an Chlochán Liath amárach.
 speak-FUT I with-him on Dunloe tomorrow
 ‘I’ll speak to him tomorrow in Dunloe.’
- b. Labharfaidh mé ar an Chlochán Liath amárach leis.
 speak-FUT I on Dunloe tomorrow with-him.
 ‘I’ll speak to him tomorrow in Dunloe.’ (Bennett et al. to appear a: 74)

Understanding the role of BINARITY in Irish is crucial to determining why these prepositional phrases can postpose in the context of small clauses. Such a structure is otherwise not predicted by Match Theory, given the prosodic structure of the small clause:

(91) Syntax-prosody mapping of Irish small clauses



Even if the prepositional phrase were to surface in its weak form in (91), it is not the leftmost constituent of a prosodic phrase, and therefore does not violate STRONG START. Yet, examples like (90b) appear to repair a violation of STRONG START by postposing the prepositional phrase.

Bennett et al. hypothesize that fulfilling the requirement that prosodic constituents contain exactly two other constituents creates an environment that is problematic for STRONG START. Violations of BINARITY can be ordinarily be avoided by rebracketing; however, if the subject (ω_2) and verb (ω_3) are phrased together and the prepositional phrase (σ) and adverb (ω_1) are phrased together, then the phonological phrase begins with dependent element (σ), and STRONG START is violated. Hence, postposing ensues. Bennett

et al.'s analysis is maximally effective because it is grounded in a solid understanding of prosodic structure in the language in question.

2.8 V1 typology and grammatical theory

A number of the studies discussed so far consider specific data from one or two languages, but aim ultimately to apply their analyses to the general typological properties associated with V1. This pertains particularly to connections between V1 and Wh1 as well as to connect between extraction asymmetries and the particular mechanism that results in V1 (e.g., Rackowski and Travis 2000, Aldridge 2004, Cole and Hermon 2008, a.o.).

2.8.1 V1 and Wh1

Efforts to explain the correlation between V1 and Wh1 on the basis of deeper grammatical principles include those of Emonds (1980), Oda (2005), Potsdam (2009), and Richards (2013b). Employing the principles below, Oda derives Greenberg's universal 12 in the following way: languages that derive V1 by raising the entire VP are unable to form *wh*-questions via movement, while languages that employ V^0 -raising can *wh*-move.

- (92) Major theoretical components of Oda (2005)
 - a. Parameterized EPP: EPP is satisfied by either a ϕ - or pred-feature (Massam 2001)
 - b. Generalized EPP: T^0 and C^0 have an EPP feature (Chomsky 2000, 2001)
 - c. EPP Uniformity: EPP on T^0 and C^0 have the same parameter settings (Chomsky 2000, 2001)

(92a) speaks to the basic derivation of V1. If the EPP is satisfied by a ϕ -feature (EPP- ϕ), then V1 is derived via V^0 -raising if the EPP is satisfied by a pred-feature (EPP-pred), then V1 is derived via VP-raising. (92b-c) together state that, if EPP on T^0 is EPP-pred, then so is EPP on C^0 . *Wh*-movement, which is ϕ -feature based, is therefore impossible in EPP-pred languages.

Potsdam (2009) argues that *wh*-clefts, but not independent *wh*-arguments, have the necessary [PRED]-feature to satisfy EPP-pred on C⁰. By incorporating the optional projection of question CPs (cf. Grimshaw 1997 and Bošković 2000), Potsdam (2009) captures the complete range of empirical data: *wh*-arguments may surface in situ in both V⁰- and VP-raising languages; in addition, V⁰-raising languages can form *wh*-questions via movement, and VP-raising languages can use *wh*-clefts.

2.8.2 V1 and Pred1

The theory that connects V1 and Wh1 makes a strong prediction about the word order of nonverbal predicates in V1 languages. EPP- ϕ languages should not have predicate-initial nonverbal clauses (NVP1). In the absence of a verb, ϕ -features on a DP would satisfy the EPP in these languages, resulting in the order DP-Predicate. In contrast, EPP-pred languages should have NVP1 clauses, as nonverbal predicates also bear a pred-feature.

The prediction that all VP-raising languages are NVP1 resonates with an oft-repeated sentiment in the literature: one of the most positive attributes of the VP-raising approach, especially when formalized in terms of an EPP-pred feature, is its ability to uniformly capture the word order of verbal and nonverbal predicates. Nevertheless, the correlation between the derivation of V1 and the structure of nonverbal phrases warrants further investigation. Languages that appear to employ V⁰-raising but lack NVP1 clauses present a problem. Irish, for instance, is often considered a prototypical V⁰-raising language, but it has PP-, NP- and AP-initial nonverbal predicates.²³

McCloskey (2005) and Bury (2005) both argue that there is no a priori reason why a language should not have a mixed system, with head movement for verbal predicates and phrasal movement for nonverbal predicates. Another solution may be found in the extension of Coon (2013b).

²³Oda's solution is to promote VP-raising in Irish, contrary to what is represented here as the standard V⁰-raising analysis of Irish.

Looking specifically at data from Chol and Tagalog, Coon (2013b) connects the general V1 tendency to lack a copula (Carnie 1995) with two other tendencies of the Austronesian and Mayan V1 languages:

- (93) Common tendencies in Austronesian and Mayan (Coon 2013b)
- a. No copula
 - b. No overt tense morphology (aspect morphology instead)
 - c. Subjects of non-verbal predicates pattern with unaccusative subjects

Coon proposes that property-denoting roots in languages with these characteristics are able to directly instantiate predicative heads without the operation *Conflation* (Hale and Keyser 1993, Baker 2003). In a language like English, *Conflation* is said to combine property-denoting roots with a null predicative head, resulting in the formation of the lexical category VERB before lexical insertion. Non-verbal predicates do not undergo *Conflation*, but remain headed by the functional category Pred⁰. The difference between verbal and nonverbal predicates is therefore feature-based in these languages.

For Chol and Tagalog, Coon proposes that property-denoting roots directly instantiate predicative heads. While there may still be a difference between verbal and non-verbal predicates in a language without *Conflation*—in terms of argument structure, for instance—the difference would not be based on features. Coon’s proposal could be extended to explain why some apparently-V⁰-raising languages also have NVP1. If it could be shown that these languages do not have *Conflation*, then the relevant head for ‘V⁰-raising’ may actually be Pred⁰ for nonverbal predicates as well as verbal predicates.

2.9 Conclusion

In this chapter, data from a number of V1 languages were presented in order to illustrate different approaches to the derivation of verb-initiality. The bulk of the data came from

two prominently-V1 language families, Mayan and Austronesian, which present intriguing similarities and differences with respect to V1. A full understanding of all the properties that characterize V1 still lies ahead; this chapter has addressed the major empirical developments, past and present, and discussed major outstanding issues and questions.

The principal conclusion that arises from examining V1 languages has been reached before: they are not a uniform group (Carnie et al. 2005, Chung 2006). For example, VOS/VSO languages differ in the factors that trigger alternations. This is an underexplored area that should contribute to the way researchers derive V1. At the same time, it is unclear whether there is adequate justification for the theoretical variation with which syntacticians account for V1 orders.

Within the generative tradition, there are several approaches to deriving V1, and it remains to be seen if these approaches will correspond to the subgroups of V1 in an exhaustive way. Most existing approaches derive V1 in narrow syntax. Within narrow syntax, analyses of V1 can be divided into those that permit flat or ternary structure and those that maintain the constituency of the *v*P/VP. Within the latter, the main approaches to V1 include base-generation of VOS with VSO derived by object postposing; VP-raising, with and without the evacuation of material from the VP prior to raising; head-movement (V^0 -raising); and subject lowering.

Certain analyses of V1 are also compatible with post-syntactic approaches to postverbal word order variation. The development of post-syntactic analyses has been stimulated by a growing body of work that explains word order variation by integrating syntactic and prosodic analyses. This is exactly the sort of approach that this thesis pursues for Niuean: Chapter 3 develops a sentence-level phonetic profile of PNI and VSO clauses in Niuean; Chapter 4 proposes an account of postverbal word order variation in Niuean that is driven by prosodic well-formedness; and Chapter 5 argues for a syntactic head movement account Niuean verb-initiality.

Chapter 3

The prosody of Niuean PNI

3.1 Introduction

This chapter presents an experimental investigation into the prosody of a Niuean construction known as pseudo noun incorporation (PNI), which is a VOS clause in an otherwise VSO language. The goals of this chapter are to i) provide a prosodic profile of Niuean PNI in comparison to Niuean VSO based on results from a production experiment; ii) present an analysis of the prosody of PNI constructions according to the tenets of Match Theory (Selkirk 2011); and iii) assess Massam's (2000, 2001) syntactic account of Niuean PNI according to the prosodic findings. This chapter is important to the overarching goals of the thesis, because it provides the phonetic foundation for the prosodic account of Niuean PNI developed in Chapter 4.

Phonological phrases (φ -phrases) in Niuean are produced with a H*L- tune. The H* occurs on the most prominent syllable of the rightmost prosodic word (PWd) in the φ -phrase (see also de Lacy 2003 for Māori and Vicenik and Kuo 2010 for Tongan). For each of the PNI constructions discussed in this thesis, the verb and the incorporated argument form a prosodic constituent. Evidence supporting this claim comes from phrase-final lengthening and pitch maxima.

Massam's (2000, 2001) syntactic analysis of Niuean PNI accounts for the construction's unique morphosyntactic properties; however, one consequence of her analysis is that θ -roles and structural positions can not be correlated. In order to address this problem, an alternative syntactic analysis is proposed, in which the instrumental argument is adjoined above the verb. Ultimately, the alternative syntactic analysis is rejected, because the prosodic data are more consistent with Massam's original syntactic analysis. However, the prosodic data are also consistent with a *prosodic*, e.g. non-syntactic analysis of Niuean PNI, which solves the original θ -role problem. A prosodic analysis is pursued in Chapter 4 of this thesis.

This chapter is organized as follows. Section 2 introduces Niuean PNI constructions, which are built on the 'incorporation' of absolutive, middle and instrumental arguments. Section 3 discusses Massam's (2000, 2001) syntactic analysis of PNI and the prosodic structure that her analysis predicts. Section 4 presents all aspects of the experiment, the results of which are analyzed in Section 5. Section 6 extends the discussion to 'Tense-Aspect-Mood' (TAM) markers, and Section 7 concludes.

3.2 Niuean PNI (revisited)

As discussed in chapter 1, Niuean is a dependent-marking ergative language that employs different case-marking paradigms for common nouns and proper nouns/pronouns (94, same as 13). The data in (95-96, same as 14-15) illustrate these characteristics, as well as the fact that the Niuean verb precedes the subject, the object, and any oblique arguments.

(94) Ergative and absolutive markers

	Ergative	Absolutive
Common nouns	<i>he</i>	<i>e</i>
Proper nouns/pronouns	<i>e</i>	<i>a</i>

(95) Transitive clause

- a. Kua kitia he tama e maukoloa he fale koloa haana.
pfv see ERG child ABS shopkeeper LOC building wealth poss
'The child saw the shopkeeper at his shop.'
- b. Kua kitia e Sione a Peleni he fale koloa haana.
pfv see ERG Sione ABS Peleni LOC building wealth poss
'Sione saw Peleni at his shop.'

(96) Intransitive clause

- a. To fano e kāmuta ke he taone apogipogi.
FUT go ABS carpenter to LOC town tomorrow
'The carpenter will go to town tomorrow.'
- b. To fano a Sione ke he taone apogipogi.
FUT go ABS Sione to LOC town tomorrow
'Sione will go to town tomorrow.'

As shown in (95), the 'basic' word order in Niuean is VSOX. However, the major constituents can also surface in VOSX order in the PNI construction. All examples of PNI discussed in this chapter alternate productively with VSOX structures.

This section reintroduces the basic syntactic and morphosyntactic characteristics of PNI, as discussed in Seiter (1980) and Massam (2000, 2001) (see also Section 1.3.4). The most common type of PNI is the incorporation of an absolutive object (PNI-abs). An example of a canonical VSO structure and its PNI-abs counterpart is shown in (97). In terms of word order, VSO (97a) and PNI (97b) constructions differ according to (i) the relative order of the subject and object; and (ii) the position of postverbal particles relative to the verb.

(97) VSO with an absolutive object and PNI-Abs

- a. Ne hī hake e Sione e lima haana ki luga.
PST raise DIR ERG Sione ABS hand POSS LOC top
'Sione raised his hand.'

- b. Ne hī *lima* hake a Sione ki luga.
 PST raise hand DIR ABS Sione LOC top
 ‘Sione raised his hand.’

In the “standard” VSO structure in (97a), the object (*italicized*), follows the subject. Particles, such as the underlined directional particle *hake*, must appear to the immediate right of the verb. In contrast, in (97b), the object precedes the subject. Furthermore, the particle in this example appears to the right of the object, rather than in its canonical position adjacent to the verb. The inability of the of particle to surface in its preferred postverbal position in this example provides syntactic evidence that the verb and the object in PNI constructions form a surface constituent.

In the domain of morphosyntax, VSO and PNI constructions differ in terms of the functional morphology associated with the object. Objects in VSO clauses are obligatorily marked for case. In (97a), for example, the object is preceded by *e*, the absolutive marker for common nouns. In contrast, in the PNI construction in (97b), no case morphology is associated with the object. In fact, the object in a PNI construction may not be preceded by any functional material, although it may *contain* functional material, as shown in (101b). Note also that subjects in VSO clauses are marked with ergative case, while PNI subjects are marked absolutive.

A summary of the characteristics of PNI that are most relevant to this chapter are given in (98).¹

(98) Characteristics of PNI

- a. The incorporated argument surfaces immediately to the right of the verb.
- b. postverbal particles surface after the incorporated argument.
- c. The incorporated argument is not preceded by functional morphology.

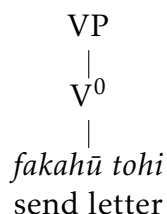
¹See Section 1.3.4, specifically example (30), for a more comprehensive list of the characteristics of Niuean’s PNI constructions.

3.2.1 Morphological and syntactic analyses

Massam (2001) considers and ultimately rejects two morphological approaches to noun incorporation (NI) before proposing a syntactic analysis for Niuean (and renaming the phenomenon PNI). The first is the lexical approach, which maintains that the relationship between the verb and the incorporated argument is established in the lexicon. Specifically, the noun root and the verb root are combined in the lexicon and enter the syntactic derivation as a compound. This type of approach, schematized below, is advanced in di Sciullo and Williams (1987) and Rosen (1989).

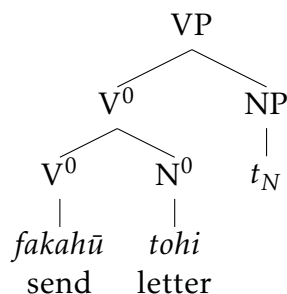
- (99) a. Kua [_{VP} fakahū tohi] e ekekafo.
 pfv send letter ABS doctor
 ‘The doctor sent the letter.’

b. Lexical approach to NI



Baker (1988, 1995, 1996, 2009) argues for a different type of morphological approach, in which noun incorporation is achieved via head movement. Under this analysis, while the verb and the incorporated argument still form a single complex word, the relevant word formation takes place in the syntax. Baker’s approach is schematized in (100):

(100) Morphosyntactic approach to NI



Both morphological analyses face a serious problem when it comes to complex incorporated arguments. As illustrated below, incorporated arguments in Niuean can be modified by adjectives (101a), coordinate phrases (101b), and nonfinite relative clauses (101c) (same as 22a-c).

(101) PNI with complex objects

- a. Kua onoono *fakatino mahaki toili* e tama he aoga.
 pfv look.at pictures huge large ABS child LOC school
 ‘The child is looking at extremely large pictures at school.’
- b. Ne tō *talo mo e tau fiti* e magafaoa.
 PST plant taro comptv ABS pl flower ABS family
 ‘The family planted taro and flowers.’
- c. ...ke kumi *mena ke nonofo ai* a lautolu.
 DEP.T seek thing DEP.T settle RP ABS 3.PL
 ‘...they sought a place to settle.’ (Massam 2001:160)

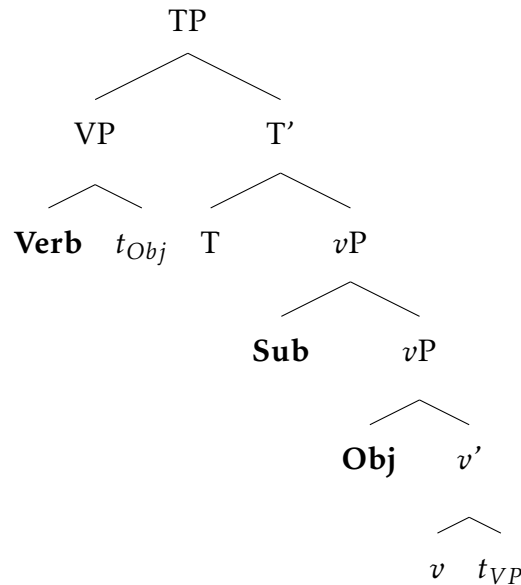
These examples of modified incorporated objects are problematic for both morphological approaches, because whether the hypothetical compound verb is formed in the lexicon or the syntax, the existence of a compound consisting of a combination of nouns, prepositions, case particles, tense markers, etc. would be quite unexpected for a predominantly isolating language.

VP and VP-remnant movement

A strictly syntactic alternative to the lexical-incorporation and head movement analyses comes from Massam (2000, 2001), who argues that these structures are not composed of V^0 - N^0 compounds. Instead, Massam posits that the derivation of PNI is tightly connected to the general derivation of verb-initial word order (V1). In the case of canonical VSO, Massam proposes that when a transitive verb selects a DP object, that object leaves the VP for case-checking purposes. V1 is subsequently achieved by fronting the remnant VP to the specifier of TP. Movement of the predicate to spec,T is motivated by T^0 's EPP feature

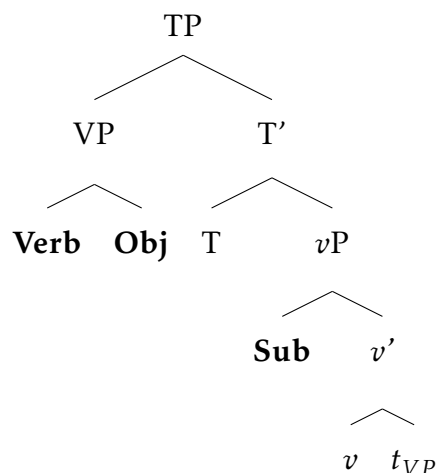
[EPP-pred], which attracts predicates. This EPP feature differs from the one found in more familiar languages which attracts subjects (see Section 2.5 for more on the EPP in the context of V1 clauses). The derivation of VSO word order via VP-remnant movement is shown schematically in (102).

(102) VP-remnant movement



The differences between VSO and PNI structures stem from the type of object that the verb selects. Massam proposes that transitive verbs optionally select NP objects. Unlike their DP counterparts, NP objects do not require case; hence, they can remain inside the VP. If V^0 selects an NP, both the V^0 and the NP move when the VP moves. As shown in (103), this derivation results in the VOS order of PNI clauses.

(103) VP-movement



The VP/VP-remnant account of Niuean V1 captures all of the differences between canonical VSO and PNI structures highlighted in the previous section. Recall that postverbal particles surface between the verb and the subject in VSO structures but follow the incorporated argument in PNI structures (compare (97a) and (97b)). In both VSO and PNI clauses, the VP fronts to a position higher than the postverbal particle. In VSO structures, this results in the order V-part-S-O, since the object has evacuated the VP before fronting ensues. In PNI structures, the verb and the object move as a unit, so the particle is ultimately pronounced after the object. Massam proposes that objects in PNI clauses only project as high as NP, which explains the fact that objects in PNI clauses do not surface with case or any other functional morphology. Massam's speculation that these incorporated arguments are of category NP - not N^0 - is supported by the fact that they can be quite complex, as shown in (101).

Middle and instrumental PNI

Massam's account applies straightforwardly to PNI-abs; and it also applies straightforwardly to the incorporation of middle objects, if an analysis is adopted in which middle

objects are VP internal (Chung 1978).² In VSO middle constructions (104a), the object bears oblique case instead of absolutive case. Despite this distinction, the PNI version of the middle construction (PNI-mid) has the same surface characteristics as the PNI-abs construction (compare (97b) and (104b)): no functional morphology precedes the object, the object immediately follows the verb, and the subject bears absolutive case.

(104) VSO with a middle object and PNI-mid

- a. Kua fakalilifu e tau momotua *ke he ekekafo*.
PFV respect ABS PL old.PL GL LOC doctor
‘The old people respect the doctor.’
- b. Kua fakalilifu *ekekafo* e tau momotua.
PFV respect doctor ABS PL old.PL
‘The old people respect the doctor.’

Instrumental PNI occurs when an instrument is incorporated into the verb, as in (105b). Here, too, the incorporated argument cannot be preceded by case marking or any other functional morphology. In the previous examples of PNI-abs, the PNI constructions have absolutive subjects, even though their VSO counterparts surface with ergative subjects. In PNI-inst, the subject continues to surface with ergative case when the PNI verb is underlyingly transitive.

(105) VSO with an instrumental argument and PNI-inst

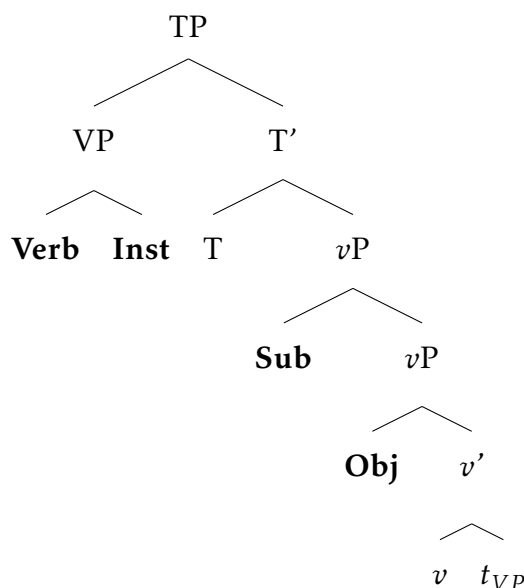
- a. Kua fakahū he ekekafo e tohi *he vakalele*.
PFV send ERG doctor ABS letter LOC airplane
‘The doctor sent the letter on the airplane.’
- b. Kua fakahū *vakalele* he ekekafo e tohi.
PFV send airplane ERG doctor ABS letter
‘The doctor sent the letter on the airplane.’

²For a discussion of constructions with middle as compared to absolutive objects, see Section 4.3, as well as Chung (1978), Massam (2001), and Seiter (1980).

Despite the general success of Massam's syntactic account, there remain a few problematic details concerning PNI-inst. Whereas middle and direct objects are in complementary distribution, instrumental objects and direct objects can co-occur, as in (105).

According to Massam, each PNI construction consists of a verb that selects an NP, so in the PNI-inst construction, the verb selects an instrumental NP. This is shown in (106).

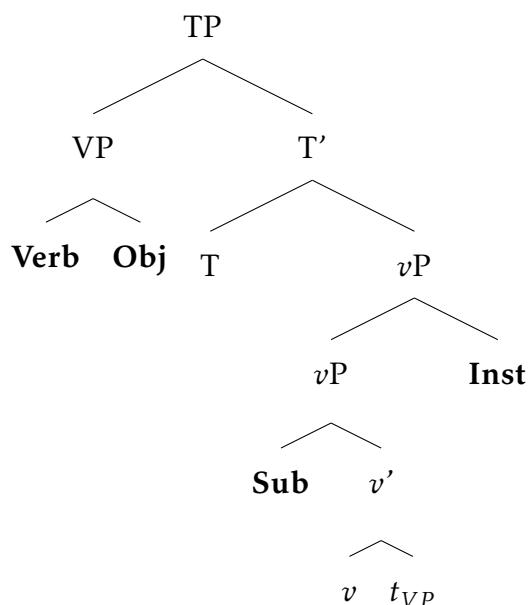
(106) PNI-inst with an absolutive object



As the above examples shows, Massam (2001) must occasionally generate the absolutive argument somewhere other than sister to V^0 , because i) PNI-inst constructions can contain both ergative and absolutive arguments, and ii) for Massam, the incorporated argument is always generated as sister to V^0 . Thus, Massam proposes that direct objects are optionally generated in a specifier, where they are accessible for case checking, but not implicated in VP movement.

However, it is unclear why a direct object should be generated as sister to V^0 only when the clause does not also contain an NP instrumental. Likewise, it is unclear why an instrumental argument should be generated as sister to V^0 only when it projects no higher than NP (i.e., in the PNI construction shown in (106)), but adjoined higher in the clause when it surfaces as a PP, as shown in (107).

(107) VSO with an instrumental PP



Note that the solution to this problem cannot be a matter of lexical subcategorization, because whether a direct object is generated as the sister to V^0 or in a higher specifier position does not depend on the particular verb. The same verb can surface in VSO, PNI-abs, and PNI-inst constructions, as in (108a-108c):

(108) VSO, PNI-abs, and PNI-inst with the verb *fakalilifu* ‘send’

- a. Kua fakahū he ekekafo e tohi he vakalele.
 pfv send ERG doctor ABS letter LOC airplane
 ‘The doctor sent the letter on the airplane.’
- b. Kua fakahū vakalele he ekekafo e tohi.
 pfv send airplane ERG doctor ABS letter
 ‘The doctor sent the letter on the airplane.’
- c. Kua fakahū tohi e ekekafo he vakalele.
 pfv send letter ABS doctor LOC airplane
 ‘The doctor sent the letter on the airplane.’

In sum, different types of PNI constructions have similar syntactic and morphosyntactic profiles. Massam accounts for these similarities by proposing that all PNI constructions contain a VP consisting of a V^0 and an NP. The cost of surface uniformity for

different PNI constructions is a considerable degree of variation in the generation of arguments for each PNI/VSO pair. Absolutive objects can be selected by V^0 , as in PNI-abs and VSO clauses, or they can be generated in the specifier of the projection associated with absolutive case, as in PNI-inst constructions. Instrumentals can be selected by V^0 , as in PNI-inst constructions, or adjoined to vP, as when they surface in PPs.

If absolutive objects were always generated in VP and instrumental arguments were always adjoined to a verbal projection, it would be impossible to maintain that different types of PNI constructions always contain a fronted VP consisting of only a V^0 and an NP. For example, in the case of instrumental PNI, a DP direct object might originate in VP and eventually leave to check case, as in VSO clauses. An instrumental NP might be adjoined to VP in a position ultimately implicated in VP-raising. If this situation were to arise, the fronted VP constituent in the ensuing PNI-inst construction would look like the one shown in (109b).

- (109) a. Massam's VP: $[_{VP} V NP_{Inst}]$
 b. Alternative VP: $[_{VP} [_{VP} V t_{DO}] NP_{Inst}]$

On the basis of syntax alone, it is difficult to determine whether PNI-inst clauses contain a constituent like (109a) or one like (109b), since they form a unique surface constituent in both cases. The next section illustrates how prosodic information can be used to differentiate between these two structures.

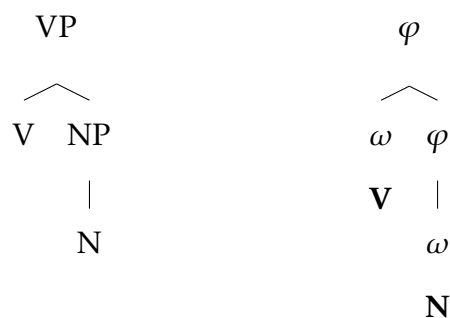
3.2.2 Prosodic predictions

Match Theory (Selkirk 2011) is a syntax-prosody interface theory that posits a series of violable constraints governing the correspondence between syntactic and prosodic constituents. According to Match Theory, clauses with illocutionary force correspond to intonational phrases (ι), XPs correspond to phonological phrases (φ), and X^0 s correspond to phonological words (ω). The present study is presented in terms of Match Theory, but

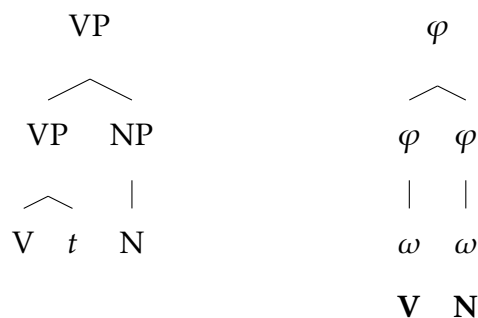
edge-based theories of the syntax-prosody interface make similar predictions (see e.g., Selkirk 1986, 1995; Truckenbrodt 1995, 1999).

For the fronted VP, Match Theory predicts the syntax-prosody correspondence shown in (110) in the case of Massam's account (cf. Bennett et al. to appear a and b) and the one shown in (111) for the alternative VP structure introduced above.

(110) Syntax-prosody mapping of Massam's VP



(111) Syntax-prosody mapping of the alternative VP



The difference between (110) and (111) is that the V^0 in (111) is predicted to constitute its own φ -phrase. Because Niuean demarcates the right edges of φ -phrases, as I will soon show, it should be possible to distinguish between (110) and (111) on the basis of whether or not a φ -phrase boundary surfaces between the verb and the noun in PNI constructions. (Note that the use of this prosodic criterion depends on an assumption of syntax-prosody isomorphism—an assumption I adopt in the absence of evidence to the contrary.)

3.3 Instrumental study

Massam (2000, 2001) demonstrates that, from a syntactic perspective, the verb and the incorporated argument form a surface constituent in Niuean PNI constructions. The present study asks whether these two elements also form a prosodic constituent. Massam maintains that the fronted VP has the structure $[_{VP} V NP]$ whether the relevant NP is a direct, middle, or instrumental argument. Here, I investigate whether the prosodic profile of different PNI constructions is consistent with this account. The results of the study suggest that PNI-inst and PNI-mid constructions are prosodically identical to PNI-abs constructions and that the verb and the incorporated argument form a prosodic constituent in PNI constructions.

3.3.1 Materials and methods

Materials

The experiment consisted of twelve conditions crossed with the three factors, as in (112):

(112) Experimental factors

- a. Structure (PNI vs. VS)
- b. Argument type (absolute vs. middle vs. instrumental)
- c. Complexity (modified vs. unmodified).

Complex arguments were modified by either an adjectival phrase or a conjoined phrase. The experiment included sixty test items, five for every logically-possible combination of the factors listed above and forty fillers for a total of one hundred sentences ((2 x 3 x 2) factors x 5 items + 40 fillers = 100 sentences).

The materials were largely based on examples in the literature (Seiter 1980, Sperlich 1997, Massam 2001), but were adjusted in collaboration with a Niuean-speaking Masters student in the University of Auckland's linguistic department in order to meet the re-

quirements for this study. For example, all clauses were modified to contain exactly one TAM marker in clause-initial position and an extraneous adjunct in clause-final position, in an effort to avoid positional effects on target material. An example of each condition is given in (113-115).

(113) VS vs. PNI-abs

- a. Kua tō he magafaoa e tau huli talo (mo e tau fiti) he māla.
PFV plant ERG family ABS PL shoot taro COMTV ABS PL flower LOC farm
‘The family planted taro shoots (and flowers) at the farm.’
- b. Kua tō huli talo (mo e tau fiti) e magafaoa he māla.
PFV plant shoot taro COMPTV ABS PL flower ABS family LOC farm
‘The family planted taro shoots (and flowers) at the farm.’

(114) VS vs. PNI-mid

- a. Kua onono e faiaoga (ke he tau fakatino mahaki toili) he paka kaupā
PFV look.at ABS teacher GL LOC PL pictures huge large LOC flat shield
‘The teacher is looking at the (extremely large) pictures on the wall.’
- b. Kua onono fakatino (mahaki toili) e faiaoga he paka kaupā pā
PFV look.at pictures huge large ABS child LOC wall flat shield
‘The teacher is looking at the (extremely large) pictures on the wall.’

(115) VS vs. PNI-inst

- a. To kai he fifine e vala povi aki e titipi (mo e huki) he fale kai.
FUT eat ERG cook ABS piece beef with ABS knife COMTV ABS fork LOC kitchen
‘The woman will eat the beef with a knife and fork in the kitchen.’
- b. To kai titipi (mo e huki) he kuki e vala povi he fale kai.
FUT eat knife COMTV ABS fork ERG cook ABS piece beef LOC kitchen
‘The woman will eat the beef with a knife and fork in the kitchen.’

Methods

Seven native speakers living in Auckland, New Zealand participated in the study. All participants self-identified as Niuean-English bilinguals literate in both languages.

A Niuean-speaking Masters student in linguistics at the University of Auckland conducted the recording sessions. Participants were instructed to read each sentence and then produce it with neutral intonation. The research assistant and the participant discussed ‘neutral intonation’ until the participant reported feeling comfortable with the task. They were also instructed to repeat sentences that they felt they did not produce well or naturally. The stimuli were presented in a semi-random order so that similar items were separated by at least six non-similar items.

Data from each participant were recorded over the course of two recording sessions. Each recording session included 30 test items and 20 fillers. A mixture of VS and PNI examples were recorded in each session, in order to control for the possibility that participants would approach different sessions with different strategies. However, VS/PNI minimal pairs were not included in a single session, in an attempt to deter participants from using metalinguistic awareness in the completion of the task.

Data from two speakers (one female; one male) were not analyzed due to the speakers’ apparent difficulty with the task, as evidenced by hesitant, disfluent speech. Data from the remaining speakers were coded by a Harvard undergraduate trained in Praat (Boersma and Weenink 2013) and naïve to the purpose of the study. If the coder determined that an example contained excessive background noise or was otherwise unusable, the corresponding VS or PNI example was excluded as well.

3.3.2 Results

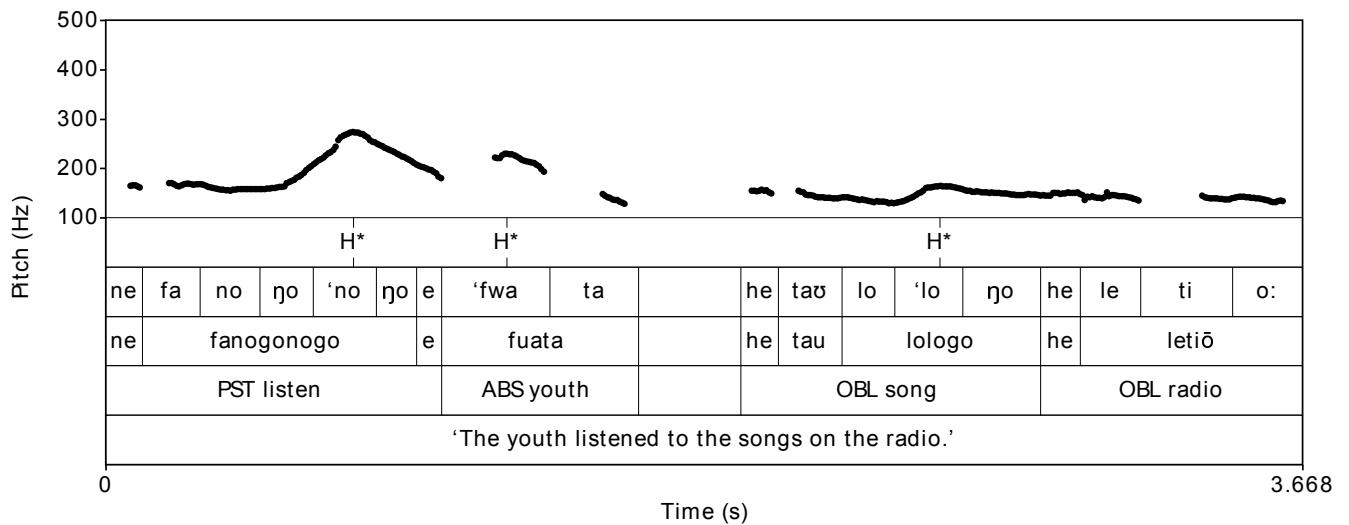
The data collected in this study suggest that Niuean utterances are produced with a series of H*L- tunes, in which the H* is associated with the most prominent syllable of the rightmost prosodic word of a prosodic constituent that corresponds to a syntactic constituent that is smaller than the clause. At the same time, not all syntactic words bear a H* tone. As such, I take each H*L- tune to correspond to a φ -phrase.

H* tones occur on the final syllable of the rightmost prosodic word in cases where the

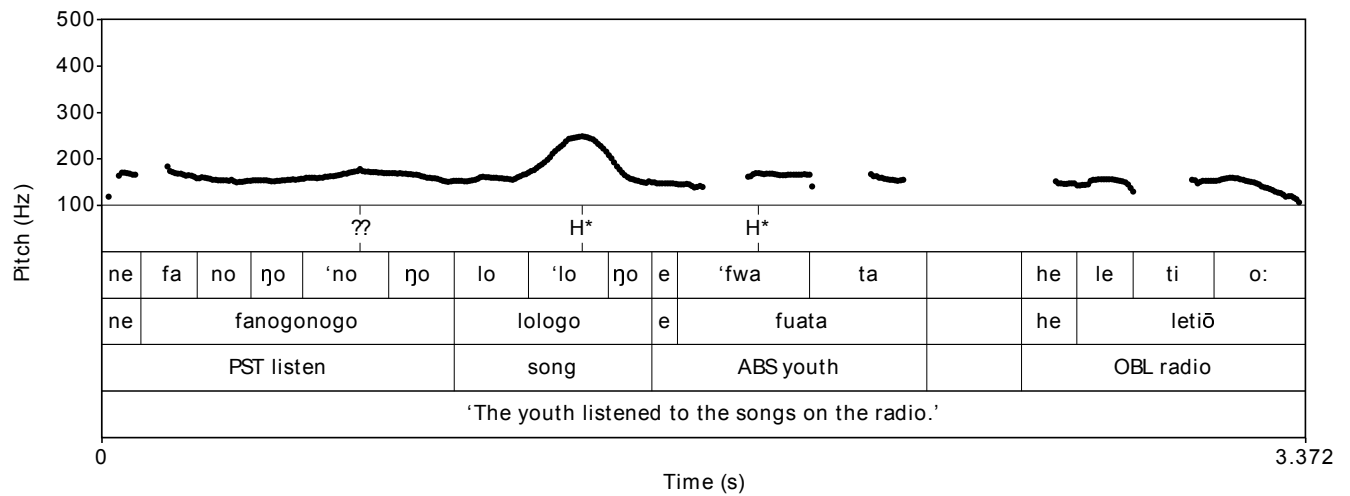
final syllable contains either a long vowel or a diphthong; otherwise, the H* occurs on the penultimate syllable of the rightmost prosodic word. The location of the H* is consistent with Rolle and Starks' (to appear) account of lexical stress in Niuean. After each H*, the pitch begins to fall immediately and continues to fall until the position of the next H* is reached (cf. Sperlich 1997:10).

Maximum pitch was measured to assist in the identification of φ -phrases. Pauses and duration, two other common indicators of φ -phrase boundaries, were also measured. Example (116) provides an illustration of the pitch contours associated with the VS examples, and example (117) provides an illustration of the pitch contours associated with PNI examples.

(116) Example pitch track VS-mid



(117) Example pitch track PNI-mid



Pitch maxima

A chart summarizing the pitch results is provided in (118), where the first constituent (Const 1) corresponds to the verb in both conditions and the second constituent (Const 2) corresponds to the subject in the VS condition and the incorporated argument in the PNI condition:

(118) Maximum F₀ in Hz

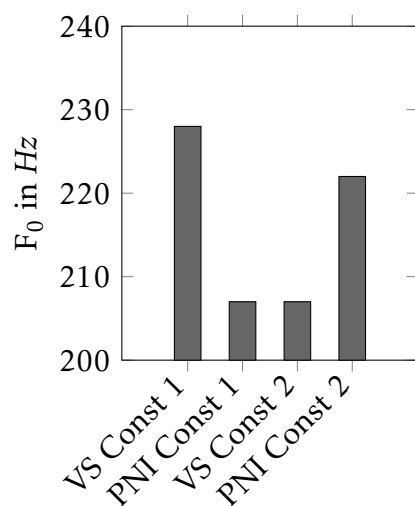
	Const 1		Const 2	
	VSO	PNI	VSO	PNI
Abs <i>n</i> =37	225	210	216	230
Mid <i>n</i> =35	232	203	198	215
Inst <i>n</i> =29	228	209	208	220
Mean <i>n</i> =101	228	207	207	222

On a direct comparison of the PNI condition and the VS condition, the maximum F₀ value on the verb (Const 1) is significantly higher in the case of VS than it is in the case of PNI (Paired t-Test; *p* < 0.0001). The maximum F₀ value on the constituent that follows the verb (Const 2) is significantly lower in the VS condition than it is in the PNI condition

(Paired t-Test; $p < 0.0001$). These statistically significant findings represent perceptually salient differences of approximately 21 and 15 Hz, respectively (see Stevens 2000 for a discussion of just-noticeable difference in the context of F_0).

Here and elsewhere, items with modified objects and items with unmodified objects are treated as a single group, because there is no discernible difference between the two conditions with respect to the phrasing of the verb. For example, one might have expected verbs in modified PNI examples to be parsed as their own φ -phrases. Instead, there is no evidence of a φ -phrase boundary occurring on the right edge of verbs that are followed by modified incorporated objects. While the average maximum F_0 value on a verb followed by a modified object in the PNI condition is 210 Hz and the average maximum F_0 value on a verb followed by an unmodified object in the PNI condition is 204 Hz, this difference represents neither a perceptually salient nor a statistically significant difference (Paired t-Test; $p = .416$).

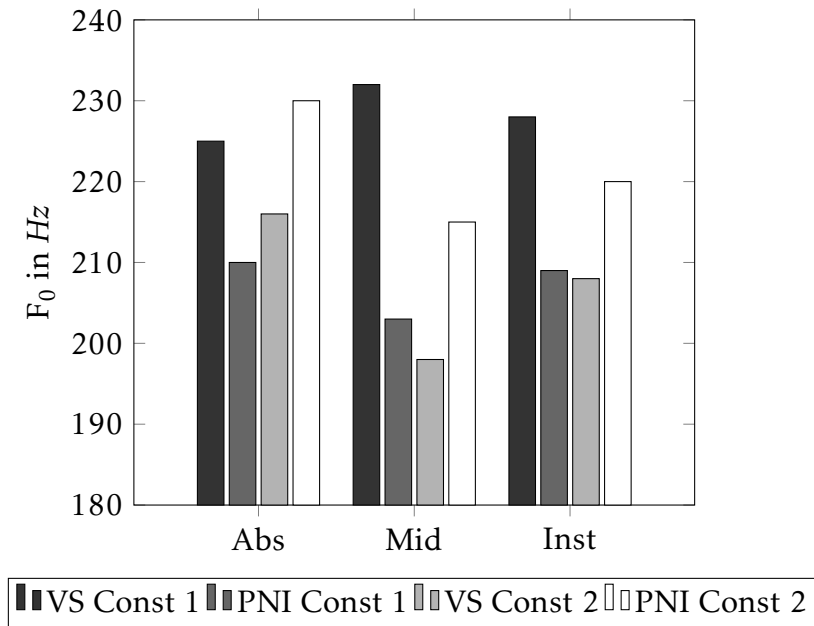
(119) Max F_0 on Const 1 and Const 2, All Conditions



The same patterns are found for each type of PNI/VSO pair. For each argument type, the maximum F_0 on the verb is higher in the VSO condition than in the PNI condition (Paired T-Test; $p < 0.005$ for absolutives; $p < 0.0005$ for middles; and $p < 0.005$ for instrumentals). In contrast, the maximum F_0 on the prosodic word following the verb is

significantly lower in the VSO condition than it is in the PNI condition (Paired t-Test; $p = 0.01$ for absolutives; $p < 0.01$ for middles; and $p = 0.015$ for instrumentals).

(120) Max F_0 on Const 1 and Const 2, Each Condition



Duration

The next set of results pertains to duration of the verb and is summarized in (121).

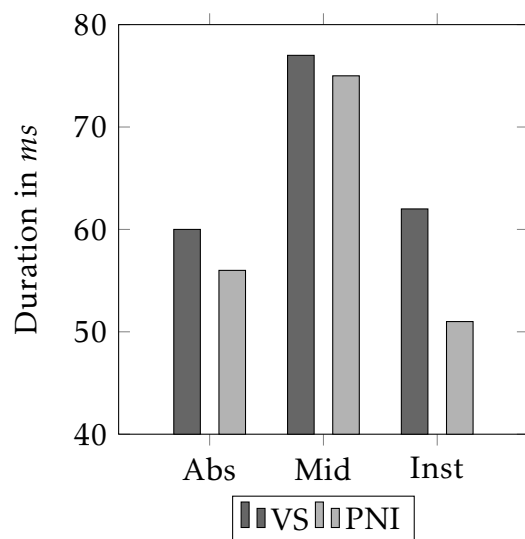
(121) Duration of verb in *ms*

	VS	PNI
Abs $n=37$	60	56
Mid $n=35$	77	75
Inst $n=29$	62	51
Mean $n=101$	66	61

The verb in the VSO condition is significantly longer than the verb in the PNI condition (Paired t-Test; $p < 0.0005$). This general finding holds for each of the different

argument conditions as well (Paired T-Test; $p = 0.016$ for absolutes; $p = 0.08$ for middles; and $p < 0.005$ for instrumentals).³

(122) Duration of Verb, Each Conditon



The difference in duration between the verb in VS constructions and the verb in PNI construction reaches statistical significance, but the size of the effect is below the perceptibility threshold (Stevens 2000). This finding is consistent with the idea that phrase-final lengthening is a mechanical effect of prosodic planning (Myers and Hansen 2007), as opposed to a reliable cue of prosodic constituency.

Pauses

Pauses were 2.5 times more likely to occur after VS verbs ($n=10$) than after PNI verbs ($n=4$). In cases where a pause occurred after a PNI verb, the pause was preceded by a modified incorporated argument. Pauses did not occur between PNI verbs and unmodified incorporated arguments in these data.

It is unlikely that phonological weight or length underlies this finding. Pauses (indicated by ‘||’) preceded modified incorporated arguments with four syllables, but did not

³The middle verbs were, overall, longer than the verbs in the other two conditions. The absolute and instrumental conditions contained a number of one- and two-syllable verbs, but the verbs in the middle condition contained an average of four syllables.

precede unmodified incorporated arguments with the same number of syllables. For example ...*fiafia* || *manu huifā*... ‘...like four-legged animals...’ and ...*futi* || *ika lahi* ... ‘...catch big fish...’ were attested, but *fakalilifu* || *ekekafo*... ‘...respect (the) doctor...’ and ...*fakahū* || *vakalele*.... ‘...send (by) plane...’ were not. The overall occurrence of pauses in the data is low, so a comprehensive study of the distribution of pauses would be beneficial.

3.4 Analysis of prosodic data

This section proposes an analysis of prosodic constituency in Niuean PNI constructions based on the results of the instrumental analysis discussed in the previous section. Ultimately it is concluded that i) the verb and the incorporated object constitute a phonological phrase; ii) phonological phrases can be embedded within other phonological phrases, as evidenced by the distribution of pauses; and iii) TAM are parsed into the same phonological phrase as the verb.

3.4.1 The right edge of phonological phrases

As previously noted, Niuean φ -phrases have a H*L- tune, with the H* occurring on the most prominent syllable of the rightmost prosodic word. Therefore, if the PNI verb is located at the right edge of a φ -phrase, the maximum pitch associated with the VS verb should be the same as the maximum pitch associated with the PNI verb. If the PNI verb is not located at the right edge of a φ -phrase, the maximum pitch associated with the VS verb should be greater than the maximum pitch associated with the PNI verb. In fact, the experimental data show that F₀ on the VS verb is significantly higher than on the PNI verb, indicating that verbs in PNI structures, even those with modified objects, are not produced at the right edge of φ -phrases.

The pitch maxima data also indicate that the incorporated argument in the PNI examples is at the right edge of a φ -phrase that is anterior to the φ -phrase containing the

subject in VS examples. The F_0 on the prosodic word following the VS verb (i.e. the subject) is significantly lower than the F_0 on the prosodic word following the PNI verb (i.e. the incorporated argument). The F_0 of the target H^* associated with each H^*L -tune decreases in fundamental frequency with each prosodic phrase. Given the structure of the experimental material (e.g. verb-initial, no clause initial adjuncts, etc.), this means that the incorporated argument in the PNI examples is located at the right edge of the first φ -phrase in the utterance.

Next, the duration of the verb is longer in VS structures than in PNI structures. Phonological phrase boundaries are well known to induce lengthening (Klatt 1976, Nespor and Vogel 1986; Edwards and Beckman 1988; Beckman and Edwards 1990; Wightman et al. 1992; among others). Thus, assuming that the difference in duration is indicative of phrase-final lengthening, the contrast in the duration of the verb in VS and PNI structures provides further evidence that the VS verb is at the right edge of a phonological phrase, but the PNI verb is not.

A preliminary analysis of the phrasing of VS and PNI examples is now possible. The verb and the subject each constitute their own φ -phrase in VS constructions (123a), while the verb and the incorporated argument in PNI constructions form a single φ -phrase (123b). The pause data are also numerically consistent with this finding, as the edges of phonological phrases are often marked by pauses (Scott 1982; Wightman et al. 1992; among others).

(123) Preliminary prosodic structure

- a. VSO: Verb) φ Subject) φ
- b. PNI: Verb IE) φ

Thus, the right edge of a phonological phrase does not intercede between the verb and the incorporated argument in the PNI construction, regardless of whether the incorporated argument is an absolutive object, a middle object, or an instrumental argument. This

finding is consistent with Massam's syntactic analysis of Niuean PNI, as she proposes that the PNI verb and the incorporated argument form the same type of syntactic constituent, $[_{VP} V NP]$, regardless of whether the incorporated argument is a direct object, a middle object, or an instrument.

In contrast, the alternative analysis posited that PNI-inst constructions contain a $[_{VP} [_{VP} V t] NP_{Inst}]$ constituent. Under the assumption that syntactic XPs correspond to φ -phrases and given that Niuean φ -phrases have been shown to bear a H*L- tune, the alternative analysis makes the counter-to-fact prediction that the verb in PNI-inst examples should be realized with a H* pitch target. Therefore it is also possible to rule out the alternative analysis. The distribution of pauses remains to be accounted for.

3.4.2 The left edge of phonological phrases

Recall that pauses are more likely to occur after VS verbs than after PNI verbs in these data. Furthermore, postverbal pauses are only found in PNI examples with modified incorporated arguments. In other words, speakers are able to pause between verbs and DPs, as in VS examples, and they are able to pause between verbs and modified NPs, as in half of the PNI examples, but they do not pause between verbs and unmodified NPs.

The previous section established that there is no right edge immediately following a PNI verb. Therefore, the observed pauses cannot be understood as demarcating the right edge of φ -phrases, since pauses can occur between PNI verbs and certain incorporated arguments. Instead, if pauses are understood to optionally indicate the left edge of a phonological phrase, then the distribution of pauses in these data receives a simple explanation. However, this analysis could not explain why pauses occur more frequently after VS verbs than after PNI verbs, or why it is specifically before modified incorporated arguments that pauses occur in PNI examples.

The next subsection will show that it is possible to account for the distribution of pauses in these data by appealing to the recursive nature of prosodic structure.

Recursion-based analysis

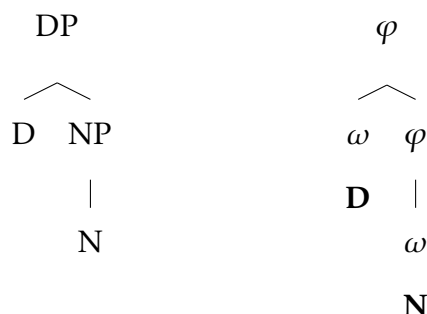
For a long time, the dominant position in prosodic theory held that all levels of prosodic structure are exhaustively parsed into constituents of the next lower level of prosodic structure (e.g. Selkirk 1984, 1986; Nespor and Vogel 1986; and Pierrehumbert and Beckman 1988). Therefore, prosodic structure was necessarily taken to be non-recursive. This position is part of the Strict Layering hypothesis (see Vogel 2009 for a recent take on the theory). More recently, researchers have argued that prosodic structure may, in fact, be recursive (e.g. Itô and Mester 2003 et seq.; Selkirk 2011; Wagner 2005 et seq.).

Some researchers who argue for recursive prosodic structure point to phonological processes that appear to target only prosodic constituents that dominate another constituent of the same category, or prosodic constituents that are not dominated by another constituent of the same category. For example, both Japanese downstep (Itô and Mester 2012) and Irish L-H rise pitch accent (Elfner 2012) are argued to apply exclusively to non-minimal projections—i.e., projections that dominate another constituent of the same category.

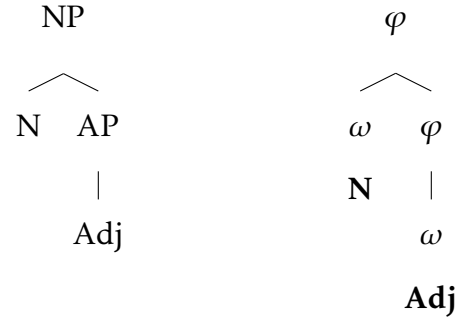
The notion of minimal and non-minimal projections can also help to account for the distribution of pauses in Niuean. Specifically, it appears that pauses optionally mark the left edge of non-minimal projections. The syntax-prosody mapping that Match Theory predicts for DPs, modified NPs, and unmodified NPs is provided in (124).

(124) Syntax-prosody mapping of DP, modified NP, and unmodified NP

a. Syntax-prosody mapping for DP



b. Syntax-prosody mapping for modified NP



c. Syntax-prosody mapping for unmodified NP



This analysis captures the asymmetry in the distribution of pauses preceding modified and unmodified NPs, because modified NPs have a non-minimal φ -phrase at their left edge, but unmodified NPs do not. Because only half of the V-NP sequences contain NPs that map onto non-minimal phrases, the Match Theory account also provides a simple explanation for why pauses are approximately half as likely to interrupt V-NP sequences (PNI examples) as compared to V-DP sequences (VSO examples).

Finally, this analysis also accounts for the finding that pauses optionally precede DPs and PPs in other places in the clause as well. A further look into the distribution of PP- and modified DP-internal pauses may be relevant to a conversation about whether prosodic indicators are obligatory or variable, depending on whether all non-minimal phonological phrases are equally likely to condition the appearance of a pause.

An alternative analysis for the distribution of pauses

Recall that Match Theory predicts that Massam's syntactic account of PNI will be realized with the prosodic structure in (125), which is partially unary branching:

(125) Syntax-prosody mapping of Massam's VP



MATCH constraints (Selkirk 2011) call for correspondence between syntactic and prosodic structure. Situations arise, however, where constraints on the prosodic grammar would be violated were the principles of Match Theory to be followed. In these cases, the mandate for one-to-one mapping is sometimes overridden. So far, this chapter has taken the position that the prosodic structure of Niuean PNI is isomorphic with the syntactic analysis, because we have seen no evidence to the contrary.⁴

Cross-linguistically, however, prosodic grammars prefer to output binary structures (e.g., see Mester 1994, Selkirk 2000, and Itô and Mester 2007; and in the context of V1 languages, see Elfner 2012 and Bennett et al. to appear a, b for Irish). Currently, there is no diagnostic for the left-edge of minimal φ -phrases in Niuean. Hence, there is no simple way of confirming that the structure in (125) is not actually rendered as the exclusively binary-branching (126). If the structure in (126) were shown to be correct, the distribution of pauses would need to be reanalyzed as a left-edge boundary diagnostic for all φ -phrases.

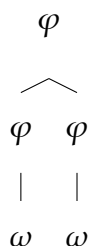
⁴One exception to this generalization is that syntactic objects with no phonological content have not been included in the building of prosodic structure (See also Elfner 2012).

(126) Syntax-prosody mapping of Massam's VP with binary branching



In both cases, the prosodic data are consistent with Massam's syntactic account. In order to distinguish between a direct syntax-prosody mapping with non-minimal left-edge marking and the alternative analysis with binary branching and across-the-board left-edge marking, more prosodic data are needed. The relevant examples would need to exhibit a direct syntax-prosody mapping that included a unary-branching φ -phrase with a discernible right edge. Hence, the unary-branching φ -phrase would have to surface to the left of a sister constituent, as in (127).

(127) Structure needed to distinguish (125) from (126)



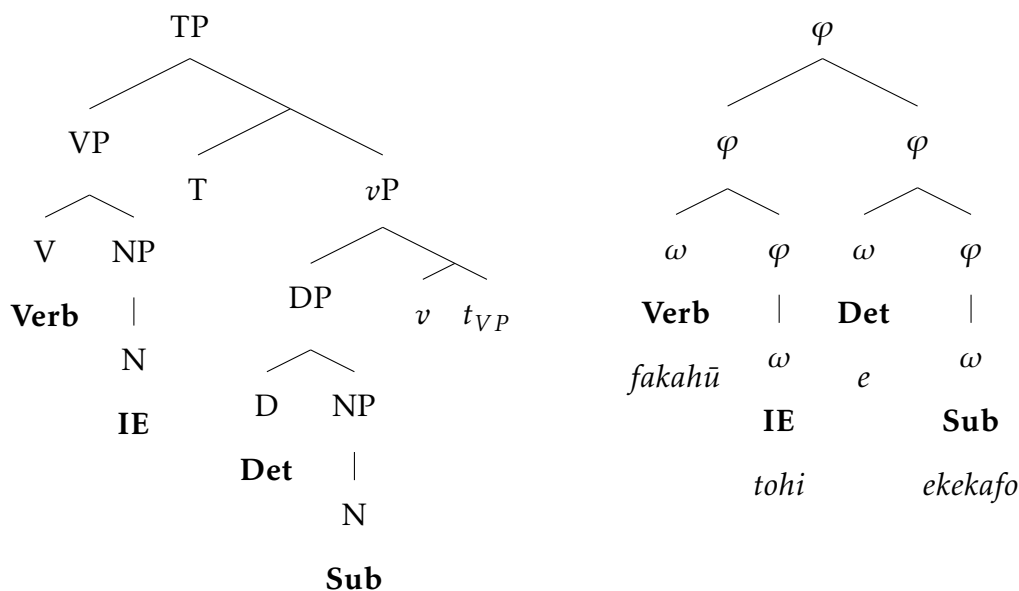
Finding the right combination of phrases (in terms of XPs or φ -phrases) is complicated by the fact that Niuean phrases typically contain one or more particles. Directional particles and adverbial elements appear to be good candidates for unary branching; however, these elements are most likely predicate heads that form a complex predicate with the main verb (see Chapter 5 and Massam 2013 for Niuean; see Lynch et al. 2011 for other Oceanic languages). If so, these 'adverbial elements' do not create the right environment to further test the availability of unary branching in Niuean.

Currently, there is no satisfying solution to this problem. Thus, in the absence of any indication that Niuean mandates binary branching in the prosodic domain, I assume a direct application of Match Theory from here forward. Fortunately, this problem does not interfere with our ability to conclude from these data that for each of the different types of PNI constructions, the verb and the incorporated argument form a unique φ -phrase. In other words, no right-edge boundary marker intervenes between the verb and the incorporated argument. This finding is consistent with Massam's (2001) syntactic analysis of Niuean PNI inasmuch as PNI-abs, PNI-mid, and PNI-inst each surface with a VP constituent comprising a verb and an NP.

In the diagrams below, the result of directly applying Match Theory (Selkirk 2011) to Massam's analysis is shown through the TP level (italicized in 128):

- (128) Kua *fakahū tohi e ekekafo*.
 PFV send letter ABS doctor
 'The doctor sent the letter.'

- (129) Syntax-prosody mapping of PNI through the TP level



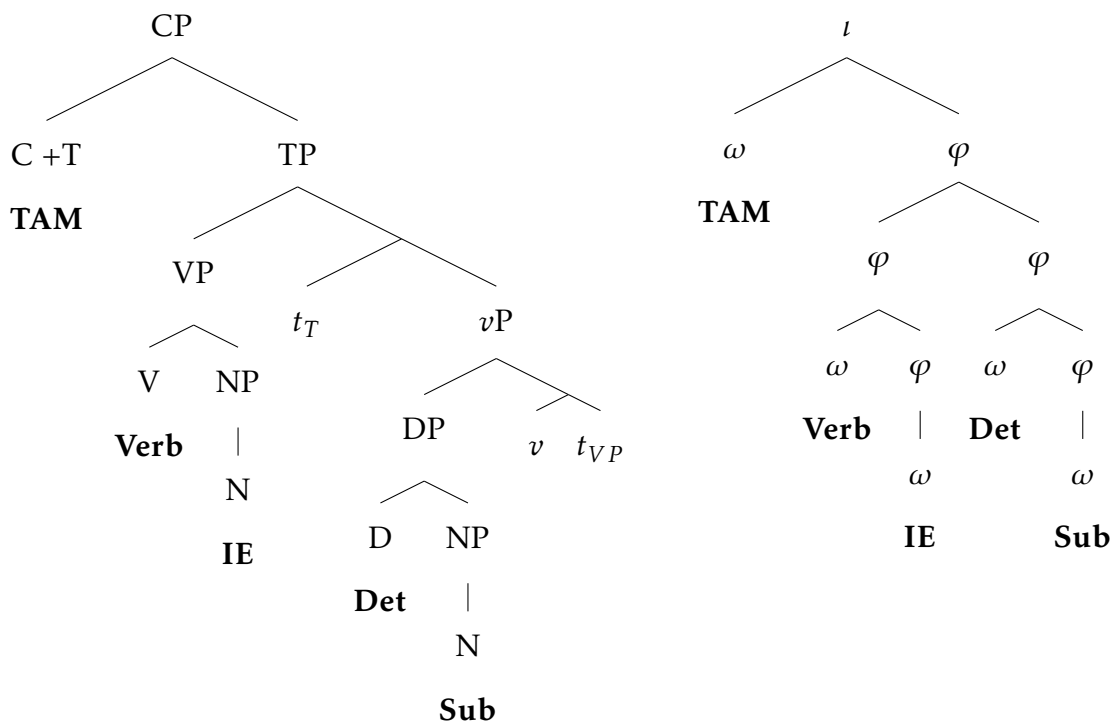
The next section extends the discussion throughout the TP level and beyond by taking a look at TAM markers at the syntax-prosody interface.

3.4.3 Tense-Aspect-Mood

Massam (2009b) proposes that Niuean generates its TAM markers in an extended CP projection. The extended CP analysis of TAM replicates the canonical functional field (i.e., the notional equivalents of CP > TP > AspP are generated within the extended CP on this account). However, the extension of CP does not negate the need for a “regular” TP to appear in its standard position: T⁰ hosts the EPP-pred feature that motivates VP-raising. Massam posits that null T⁰ moves to the extended CP projection and forms a complex head with the TAM markers located there.

The tree in (130) illustrates the syntax-prosody mapping of a PNI clause according to the tenets of Match Theory (2011); it abstracts away from the details of Massam’s (2009b) analysis of TAM, however, in order to highlight the information that is most relevant to the building of prosodic domains.⁵

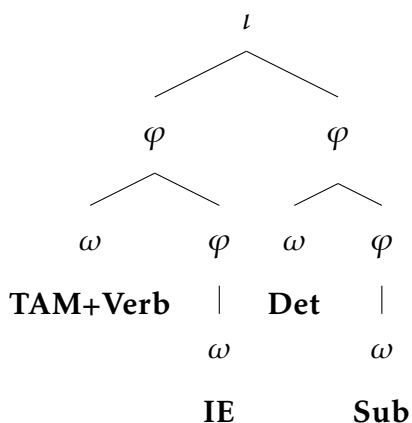
(130) Predicted syntax-prosody mapping of PNI through the CP level



⁵See 5.3 for a more detailed discussion of Niuean TAM.

Match Theory, together with the proposed prosodic analysis (as well as the alternative analysis), predicts that a pause should optionally occur between the TAM marker and the verb, since the TP maps onto a non-minimal phonological phrase. However, no such pauses were found in the data. Instead, as non-stress-bearing elements, TAM markers appear to form a prosodic word with the verb, as shown in (131).

(131) Actual prosodic representation of PNI through CP level



If it could be shown that the presence of a TAM marker affects stress assignment to the verb, this would offer support for the analysis in (131). Unfortunately, due to a gap in the Niuean lexicon, it is not possible to determine whether TAM markers are taken into account during stress assignment. Word-level stress is located on the penultimate syllable unless the final syllable contains a long vowel or a diphthong (Sperlich 1997; Rolle and Starks to appear), in which case stress is located on the final syllable. However, the only monosyllabic verbs in Niuean contain either a long vowel, e.g., *tō* ‘plant,’ or a diphthong, e.g., *kai* ‘eat.’ Consequently, monosyllabic verbs in Niuean are predicted to bear stress with or without the presence of a TAM marker.

Massam (2009b) rules out a proclitic analysis of TAM on the basis of negation. Since the negative element *nākai* can surface between the TAM marker and the verb, Massam concludes that the verb is not located as high in the structure as TAM. However, even if the TAM marker were located in the C-domain, it would be hypothetically possible to

analyze it as a lexically specified proclitic (e.g., see Zec 1995) that attaches to the main predicate in affirmative clauses, but attaches to *nākai* in negative clauses (see Section 5.5 for more on negation).

There are a number of other reasons why TAM markers would be assigned the prosodic structure shown in (131), as opposed to the structure that is isomorphic with Massam's (2001, 2009b) syntactic account (130). The two most likely possibilities are that i) (131) is the result of a prosodic repair, or ii) (131) is the prosodic output of a different syntactic structure than the one proposed by Massam (2001, 2009b).

First, the fact that TAM is pronounced with the verb could be related to prosodic well-formedness. The prosodic structure in (130) incurs more violations of **STRONG START** (Selkirk 2011) than the one in (131) does (for more discussion of this constraint see Sections 2.7 and 4.3.1).

(132) **STRONG START** (Selkirk 2011):

A prosodic constituent optimally begins with a leftmost daughter constituent which is not lower in the prosodic hierarchy than the constituent that immediately follows.

The syntax-prosody mapping shown in (130) violates **STRONG START** at the level of the ι -phrase, because the TAM marker, a prosodic word, is lower in the prosodic hierarchy than its sister constituent, a φ -phrase. In contrast, the prosodic structure in (131) does not incur this violation, because the first two constituents of the ι -phrase are φ -phrases.

The second possibility is that the actual syntactic input of (131) is not the syntactic input shown in (130). The fact that the TAM marker and the verb form a prosodic word is consistent with a syntactic analysis based on head movement, where the TAM marker and the verb form a complex head. This is noteworthy in the context of the head-movement analysis of Niuean clause structure, which I argue for on independent grounds. However, as Section 3.2.1 has already established, head movement alone cannot account for PNI structures. Thus, an alternative account of PNI needs to be established before a head-

movement analysis of Niuean clause structure is tenable.

3.5 Conclusion

This chapter introduced new data on prosodic phrasing in Niuean, showing that: (i) Niuean clauses are produced with a series of H*L- tunes; (ii) pauses can follow the verb in VSO structures and the verb in PNI structures containing modified incorporated arguments, but not the verb in PNI constructions containing unmodified incorporated arguments; and (iii) TAM markers do not bear stress. The H*L- tune was analyzed as demarcating φ -phrases, where the target H* is reached on the most prominent syllable of the rightmost PWd in the φ -phrase. The distribution of pauses was accounted for by appealing to recursive prosodic structure. Specifically, pauses optionally mark the left edge of non-minimal φ -phrases. TAM markers were argued to form a prosodic word with the verb, which is consistent with the head movement account of Niuean V1 pursued in Chapter 5. For each of the three types of PNI constructions discussed in this chapter, the verb and the incorporated argument form a prosodic constituent. This finding is consistent with Massam's (2000, 2001) analysis of PNI; however it is also consistent with the alternative prosodically motivated account pursued in Chapter 4.

Chapter 4

A prosodic account of Niuean VOS

4.1 Introduction

Previous sections have established that the verb and the incorporated argument form a unique φ -phrase for each type of PNI construction under discussion, a situation which is consistent with Massam's (2001) syntactic analysis of Niuean PNI. This finding is also consistent with a prosodic account of Niuean PNI where the verb and the incorporated argument surface in adjacent positions and are phrased together for prosodic reasons. This latter style of analysis is pursued in this chapter.

In what follows, I introduce a novel constraint *ARGUMENT- φ* , based on Selkirk's (1984) *Sense Unit Condition*, which determines the optimal phrasing of the verb and the incorporated argument and motivates the restructuring of the incorporated argument and the verb at PF. A relatively high ranking constraint *MATCH- l_L* , which is based on *MATCH- l* (Selkirk 2011), ensures that the incorporated argument shifts to the position of the verb and not vice versa. In order for PF to make reference to the head-argument relationship that exists between the verb and its internal argument(s), the technology of feature checking is applied to categorial selection (c-selection), as in Chomsky (1965), Emonds (2000), Adger and Svenonius (2011), among others. More specifically, I apply Pesetsky and

Torrego's (2007) notion of 'feature sharing' to c-selection. Finally, the idea that syntactic domains are sent to the interfaces in stages captures the fact that only NPs (not DPs, PPs, or CPs) can be incorporated (Uriagereka 1999, Chomsky 2000, 2001, Svenonius 2004, Hiraiwa 2005).

This analysis has a number of positive outcomes for Niuean syntax. First, it eliminates the need to posit different locations for the generation of absolutive, middle, and instrumental arguments depending on whether the structure will ultimately be an instance of VSO or PNI and, in the case of PNI, which NP (absolutive, middle, or instrumental) is incorporated. In short, a prosodic account of PNI makes Niuean syntax consistent with the long-standing tradition of associating thematic roles with structural positions (e.g., Perlmutter and Postal 1984; Baker 1988, 1997; Hale and Keyser 1993, 2002; among others). Second, this account captures the difference between the verb's relationship to elements with which it can incorporate (namely, internal arguments) and its relationship to those with which it cannot (external arguments). These differences are implicit in Massam (2000, 2001), but are not directly addressed by her account.

Finally, a prosodic account of Niuean PNI allows for a uniform V^0 -movement analysis of Niuean V1, which in turn allows for a more parsimonious account of Niuean argument structure and the formation of the verbal complex, especially when compared to a VP-movement analysis (see Chapter 5). The prosodic account of Niuean PNI maintains that the movement of the verb into initial position is syntactic, predicting in VSO order, while the "movement" of the incorporated argument to the verb is an instance of prosodic restructuring, resulting in VOS order.

This chapter is organized as follows. In 4.2, the primary inspiration for the analysis, Selkirk's *Sense Unit Condition* (1984), is discussed in the context of related proposals. Section 4.3 introduces ARGUMENT- φ , a prosodic well-formedness constraint mandating that heads and their internal arguments are phrased together, and illustrates how adopting a feature-sharing approach to AGREE (Pesetsky and Torrego 2007) and applying it to

c-selection makes the head-argument relationship visible to PF in the context of a grammatical model where LF and PF do not interact. In Section 4.4, the proposal is placed in the context of Multiple Spell-out (Uriagereka 1999). Finally, Section 4.5 works through a sample derivation of PNI and its VSO counterpart.

4.2 *Sense Unit Condition* (Selkirk 1984)

Selkirk (1984) argues that phonological phrasing is subject to a semantic constraint she refers to as the *Sense Unit Condition* (133), which is the inspiration for the prosodic well-formedness constraint ARGUMENT- φ discussed in the next section.

(133) *Sense Unit Condition* (Selkirk 1984: 286)

The immediate constituents of a prosodic phrase must comprise a *Sense Unit*.

The *Sense Unit Condition* is defined in terms of head dependencies at the level of logical form. Two constituents (C1 and C2) form a *Sense Unit* if either (134a) or (134b) is true of the interpretation of the sentence.

(134) Conditions on forming a *Sense Unit* (Selkirk 1984: 291)

- a. C1 modifies C2 (a head)
- b. C1 is an argument of C2 (a head)

The phrasing in example (135) below is impossible, because φ_3 contains two immediate constituents—*her attention* (C₃) and *to the cat* (C₄)—that do not meet either of the conditions on forming a *Sense Unit*. The relevant syntactic constituency is given in square brackets, while phonological phrasing is indicated with parentheses.

(135) $*(_{C1}[\text{Beatrice}])\varphi_1 (_{C2}[\text{directed}])\varphi_2 (_{C3}[\text{her attention}] \text{ } _{C4}[\text{to the cat}])\varphi_3$

Another way to articulate the intuition that prosody reflects semantic relationships is to call for a correspondence between *Sense Units* and prosodic phrases. This is expressed

by the bidirectional correspondence constraint (McCarthy and Prince 1995) in (136), a version of Selkirk’s *Sense Unit Condition*.

(136) *Bidirectional Sense Unit Condition*

Prosodic phrases and *Sense Units* must correspond.

Thus, (137a) below is an improvement on (135) inasmuch as it conforms to Selkirk’s original phrasing of the *Sense Unit Condition* (133); there are no longer adjacent constituents in a prosodic phrase that do not comprise a *Sense Unit*. However, (137b) conforms to (133) as well as to the bidirectional correspondence constraint in (136) because the *Sense Unit* that consists of the verb and its arguments are realized in a unique prosodic phrase (shown underlined).

- (137) a. $(_{C1}[\text{Beatrice}])\varphi_1 (_{C2}[\text{directed}])\varphi_2 (_{C3}[\text{her attention}])\varphi_3 (_{C4}[\text{to the cat}])\varphi_4$
 b. $(_{C1}[\text{Beatrice}])\varphi_1 \underline{(_{C2}[\text{directed}] \text{ } _{C3}[\text{her attention}] \text{ } _{C4}[\text{to the cat}])}\varphi_2$

Although the *Sense Unit Condition* has fallen out of favor for reasons discussed in Section 4.3.2, the literature contains a number of other conditions on prosodic constituency that reflect the intuition behind Selkirk’s (1984) proposal, especially the version in (136). For example, the well-known constraint WRAP-XP (Truckenbrodt 1995, 1999, 2007) can be thought of in this way. WRAP-XP states that for each XP, there must be a single φ -phrase that contains it. Stated in terms of XPs, WRAP-XP is syntactically defined, and therefore its application does not rely on interpretation at LF, unlike Selkirk’s original formulation. The same can be said for two other related conditions, COMPLEMENT- φ (Henderson 2012) and *Selectional Contiguity* (Richards 2014), which will be discussed in turn.¹ The fact that these related proposals exist suggests that the basic insight of the *Sense Unit Condition* remains valid and it is worth solving the problematic aspects of its original formulation (see 4.3.2).

¹Steedman (2000) develops a categorial grammar approach to the *Sense Unit Condition*; and Watson and Gibson (2004, 2005) do the same with a processing account.

4.2.1 COMPLEMENT- φ (Henderson 2012)

Henderson (2012) appeals to a constraint he names COMPLEMENT- φ to explain an instance of anomalous phrasing in K'ichee' (Mayan). Like other Mayan languages, K'ichee' has a series of morphologically conditioned suffixes (called “status suffixes” in the Mayan literature) that indicate valency, among other things. A handful of these suffixes appear only in final position (Mondlach 1978, Larsen 1988). In (138a), the status suffix *-ik*, used in simple, intransitive clauses, surfaces in clause-final position (shown in bold), but in (138b), *-ik* fails to surface clause-medially.

(138) K'ichee' *-ik* in clause-final position

- a. X-in-kos-**ik**
COM-1SG.ABS-tire-ss
I am tired.
- b. X-in-kos-(***ik**) r-umal nu-chaak.
COM-1SG.ABS-tire-ss 3SG-RN 1SG-work
I am tired because of my work. (Henderson 2012: 5a-b)

When the inflecting preposition (called a “relational noun” in the Mayan literature) embeds a DP, as in (138b), the status suffix fails to surface. However, when the same inflecting preposition embeds a CP, as in (139) below, the status suffix must be present.

(139) K'ichee' *-ik* in clause-medial position

- X-in-kos-**ik** r-umal [_{CP} x-in-chakun-ik]
COM-1SG.ABS-tire-ss 3SG-RN COM-1SG.ABS-work-ss
I am tired because I worked. (Henderson 2012: 12d)

If a relational noun embeds a CP, as in (139), one might expect the embedded CP to project an ι -phrase, as schematized in (140):

(140) Expected phrasing of (139)

(X-in-kos-**ik** r-umal) ι (x-in-chakun-ik) ι

Henderson (2012) demonstrates that *-ik* only surfaces at the right edge of ι -phrases;² but, the ι -phrase boundary in (140) occurs between the relational noun (P^0) and the CP it selects. Therefore, the verb is actually phrase-medial, which means that the presence of the status suffix on the matrix verb is unexpected.

Henderson (2012) accounts for this puzzle with the constraint COMPLEMENT- φ (141), which he constructs in the spirit of Werle's (2004) COMPLEMENT- ω .

(141) COMPLEMENT- φ

A functional head (P^0 , in the present case) is parsed into the same phonological phrase as its syntactic complement (here, CP) (Henderson 2012: 68).

K'ichee' satisfies COMPLEMENT- φ by phrasing the relational noun, a functional head, in the ι -phrase projected by its complement CP. This phrasing leaves the matrix verb in final position, which conditions the appearance of the status suffix, as schematized in (142):

(142) Actual phrasing of (139)

(X-in-kos-**ik**) ι (P^0 [r-umal] $_{CP}$ [x-in-chakun-ik]) ι

In Selkirk's (1984) terminology, the relational noun and its complement form a *Sense Unit*, which is parsed into a unique prosodic phrase. Whereas Truckenbrodt (1999, 2007) argues that WRAP-XP applies to lexical XPs, COMPLEMENT- φ applies specifically to the phrasing of functional heads and their complements. This disparity suggests that a more general constraint is needed, such as the one proposed later in this chapter. *Selectional Contiguity* (Richards 2014) is also stated in general terms that apply to both functional and lexical projections.

²The appearance of an ι -phrase's left edge, according to Henderson (2012), conditions the projection of the preceding ι -phrase's right-edge, because recursive prosodic phrasing in K'ichee' is disallowed. Whether K'ichee' allows or disallows recursive structure is an empirical question that future work on K'ichee'an prosody should be able to determine. In the first case, it is also possible to restate the generalization so that the presence of *-ik* is conditioned by the presence of any ι -phrase edge, i.e., either the left or right edge. This commentary also applies to Aissen's (1992) similar treatment of intonational phrase clitics in Tzotzil and Popti' (Jakalte).

4.2.2 *Selectional Contiguity* (Richards 2014)

Richards (2014) proposes that word order is established in narrow syntax; however, prosody plays a role in linearization, because narrow syntax is sensitive to certain prosodic constraints. One such constraint is *Selectional Contiguity* (143).

(143) *Selectional Contiguity*

If α and β are related via Selection, create a level of prosodic-phrasing on which α and β are not separated by any prosodic-phrase boundaries.

Richards' theory depends on the idea that languages mark either the left edge or the right edge of prosodic phrases, but not both. For example, he argues that Tagalog and English mark left edges, while French, following Selkirk (1986), marks right edges.

Selectional Contiguity is one component of Richards' (2013) *Generalized Contiguity* constraint, which also applies the same principle to the two elements in a Probe-Goal relation. However, it is particularly the selectional component of the contiguity requirement that is reminiscent of the *Sense Unit Condition*, because argumenthood entails selection.

Selectional Contiguity brings about a type of prosodic rephrasing that is similar to what occurs in the K'ichee' data discussed in the previous section. Even more interesting is Richards' application of *Selectional Contiguity* to situations where movement allows otherwise non-adjacent elements to be parsed into a single prosodic phrase. For example, a head might move into a position where it can be pronounced in the same prosodic phrase as the head that selects it. *Selectional Contiguity* thus offers one way of understanding V1 phenomenon, especially V1 phenomenon purported to arise via V^0 - T^0 - C^0 movement, since X^0 -movement follows the path of selection.³

³This chapter also develops an approach to PNI that makes use of selection. However, unlike Richards (2014), I will draw a distinction between i) the idiosyncratic categorial-selection requirements of individual lexical items and ii) the predictable and cross-linguistically stable notion of selection as applied to the clausal spine, i.e., where C^0 selects T^0 , which selects Asp^0 etc.

In some cases, an intervening element might be displaced so that two heads related to one another by selection can be phrased together. Richards (2014) uses *Selectional Contiguity* to account for obligatory comparative dislocation, a phenomenon Haider (2000, 2004) refers to as the Edge Effect:⁴

- (144) a. She has more carefully analyzed the problem.
 b. She has analyzed the problem more carefully.
 c. *She has more carefully than me analyzed the problem.
 d. She has analyzed the problem more carefully than me.
 e. She has more carefully analyzed the problem than me.

The adverbial phrase *more carefully* can surface between the auxiliary verb and the main verb *or* at the end of the clause. However, when the adverbial phrase contains an overt comparative, as in *more carefully than me*, the comparative *must* surface at the end of the clause (compare (144c) to (144d-e)).

Richards (2014) attributes obligatory comparative dislocation to the projection of left-edge prosodic phrase boundaries and *Selectional Contiguity*. The examples in (145) provide more information about (144a) and (144c). Square brackets represent the relevant XPs and vertical bars represent the relevant prosodic boundaries. Note that both (145a and b) should violate *Selectional Contiguity*, because at least one left-edge prosodic phrase boundary intervenes between the auxiliary verb and the main verb it selects.

- (145) a. She has [[more] carefully] analyzed the problem →
 She has | more carefully analyzed the problem.
 b. *She has [[more] carefully [than [me]]] analyzed the problem →
 *She has | more carefully | than | me analyzed the problem.

Richards (2014) proposes that the prosodic phrase boundary that would otherwise intervene between *has* and *carefully* is suppressed in (145a). This stipulation predicts the

⁴The examples in (144) are based on Haider (2004:782) and Richards (2013:184).

grammaticality of (145a) as well as the ungrammaticality of (145b), where problematic prosodic boundaries remain.

For present purposes, the most interesting aspect of Richards' account is the observation that dislocating the comparative allows the prosody to parse the auxiliary and the main verb together. The analysis of Niuean PNI introduced in the next section and *Selectional Contiguity* share a similar objective: to ensure that two elements related to one another via a selectional relationship can be pronounced together.

4.3 ARGUMENT- φ

Example (146) introduces the ARGUMENT CONDITION ON PHONOLOGICAL PHRASING (ARGUMENT- φ), which is based on the bidirectional version of the *Sense Unit Condition* given in (136). The application of (146) to Niuean word order, in combination with MATCH Constraints, captures the fact that incorporated arguments in PNI examples are pronounced in the same prosodic phrase as the verb.

- (146) The ARGUMENT CONDITION ON PHONOLOGICAL PHRASING (*to be revised*): A head and its internal argument(s) must be adjacent sub-constituents of a φ -phrase.⁵

Recall that the *Sense Unit Condition* (Selkirk 1984) applied to pairs of constituents related to one another by argumenthood or modification (see (134)). However, for all of the cases discussed so far, e.g. COMPLEMENT- φ , *Selectional Contiguity*, and WRAP-XP, as well as for present purposes, Selkirk's condition on forming a *Sense Unit* is unnecessarily broad. It is sufficient to state the relevant condition on prosodic phrasing as applying to heads and their internal arguments. Also note that (146) is intentionally stated in terms of 'internal arguments' as opposed to 'complements.' On the one hand, 'complement' is too

⁵This ARGUMENT CONDITION ON PHONOLOGICAL PHRASING is defined broadly enough to apply to verbal and nonverbal clauses. However, PNI does not arise in the context of predicate nominals and predicate adjectives. Presumably, this is because nonverbal predicates do not select bare NP arguments.

restrictive: a head can only have one complement, but it can have multiple internal arguments. On the other hand, ‘complement’ is too broad: for example, TP is the complement of C^0 , but not generally thought of as the ‘argument’ of C^0 .⁶

Applied to PNI and argument structure in Niuean, it becomes possible to capture the fact that direct, middle, and instrumental objects, generated VP-internally, can be incorporated, while other prepositional arguments that are not selected by the verb, e.g., benefactives, goals, etc., cannot be incorporated. Presumably, these types of PPs are adjoined high enough to be VP-external (Massam 2001).

Cross-linguistically, instrumentals are among the prepositional phrases adjoined in the lowest positions (Schweikert 2005). More importantly, an analysis where instrumental arguments are syntactically distinct from other classes of PPs is necessary elsewhere in the grammar of Niuean. For example, instrumental arguments, especially those in applicative constructions, behave like subjects and direct objects with regard to relative clause formation and their ability to scope under the postverbal particle *oti* ‘all’ (Seiter 1979, 1980; Massam 2002, 2013). See Section 5.4.3 for relevant examples.

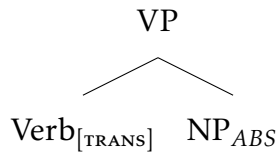
Middle objects behave less like core arguments than instrumentals do, and more like core arguments than other obliques (see Section 1.3.4). Because middle objects behave like absolutive and instrumental objects in PNI constructions—i.e., internal arguments—in what follows, they are generated VP-internally, as sisters to V^0 . This analysis follows the account in Chung (1978) (cf. Seiter 1980 and Massam 2001). As indicated in (147) and (148), I assume that verbs that take middle objects are lexically specified as [MID], while verbs that take absolutive objects are lexically specified as [TRANS].

The trees in (147-149) indicate the positions where absolutive objects, middle objects, and instrumental objects are generated under this analysis. In comparison, the subjects of transitive clauses are assumed to be external arguments, and non-instrumental PPs are assumed to be right-adjoined at VP or higher. Recall that ARGUMENT- ϕ only cares about

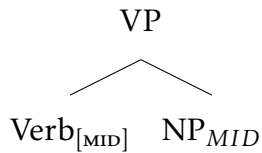
⁶This distinction is particularly important in Section 4.3.3, where the ARGUMENT CONDITION ON PHONOLOGICAL PHRASING is redefined according to categorial selection.

nominals that are generated in VP-internal positions. Examples (147-149) are shown with NP arguments, but it is a desirable outcome of this analysis that corresponding DPs (in the case of absolutes) and PPs (in the case of middles and instrumentals) are generated in the same position (cf. Massam 2001). For example, in both (147) and (149), the absolutive argument is generated as daughter to the lexical verb phrase.

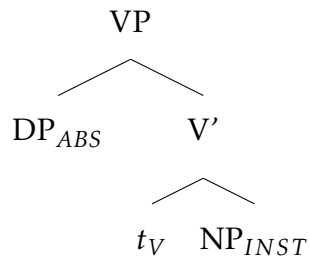
(147) In situ location of theme



(148) In situ location of middle object



(149) In situ location of instrument⁷



⁷For non-PNI structures, generating the instrumental argument in this position predicts that the constituents surface in VSO order. Niuean is generally VSO, but in the case of instrumentals, both VSXO and VSO orders are possible. VSXO seems to occur only when the applicative head *aki* is part of the verbal complex (1a), while VSO order surfaces when the instrument surfaces with *he* OBL, or *aki*, as in (1b).

- (1) a. Kua hele aki tuai e Sione e tititpi haana e falaoa.
 PFV cut APPL PFV ERG Sione ABS knife POSS ABS bread
 ‘Sione has cut the bread with his knife.’ (Seiter 1980: 277)
- b. Kua hele tuai e Sione e falaoa aki e tititpi haana.
 PFV cut PFV ERG Sione ABS bread with ABS knife POSS
 ‘Sione has cut the bread with his knife.’ (Seiter 1980: 278)

Massam (2001) proposes that for all PNI structures, the incorporated NP is generated as sister to V^0 . As discussed in (3.2.1), this means that direct object DPs are generated in a different position than direct object NPs, which are generated in the same position as instrumental NPs. Consequently, the syntactic analysis of PNI is incompatible with the long-standing tradition that thematic relationships between predicates and arguments are structurally encoded (Perlmutter and Postal 1984; Baker 1988, 1997; Hale and Keyser 1993, 2002, among others).

Baker (1988) suggests one way to formulate the idea that thematic roles correspond to particular structural positions:

(150) Uniformity of Theta-Assignment Hypothesis (UTAH) (Baker 1988)

Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

An alternative view is advanced by Hale and Keyser (1993, 2002), who do not take theta roles to be grammatical primitives. Instead, they seek to derive them from particular structural configurations. Hale and Keyser (1993, 2002) and Baker (1988, 1997) represent two opposing perspectives on theta roles in generative grammar; however, both positions acknowledge that theta roles and syntactic structure correspond, which is the guiding principle of the present proposal.

The prosodic account of Niuean PNI respects the idea that thematic relationships are structurally encoded. As shown above, an NP daughter of VP is interpreted as a theme, experiencer, or corresponding thematic role; a PP daughter of VP is interpreted as an experiencer or corresponding thematic role; and finally, an NP/PP daughter of V' is interpreted as the instrument. The position associated with an instrument in Niuean is where goal arguments are found in other languages. But unlike languages with double object constructions, instruments behave more like arguments in Niuean than goals do.⁸

⁸See also Massam (2001), where it is argued that Niuean does not have ‘true’ ditransitives, i.e. that PP adjuncts are always generated higher than VP.

The internal arguments of the Niuean verb include direct objects, middle objects, and instrumental arguments, but also unaccusative subjects and clausal complements. Yet, PNI never occurs with clausal complements, DP arguments, including pronouns and proper nouns, and the majority of unaccusative subjects (with the exception of existential constructions, see Section 1.3.4 for details). This distribution is not conditioned by length or weight: PNI can occur with complex NPs that contain DPs, as in (151), where the complex incorporated argument *titipi mo e huki* ‘knife and fork,’ contains the case-marked (hence DP) nominal *e huki* _{ABS} ‘fork.’

- (151) To kai titipi mo e huki he kuki e vala povi he fale kai.
 FUT eat knife COMTV ABS fork ERG cook ABS piece beef cl building eat
 ‘The woman will eat the beef with a knife and fork in the kitchen.’

Section 4.4 demonstrates how a cyclic approach to the building of prosodic domains can correctly account for where the effects of ARGUMENT- φ can correctly account for where PNI does and does not apply in the context of a cyclic approach to the building of prosodic domains. The question of how PF identifies a head-argument pair will be addressed in Section 4.3.2; for now, the ability of PF to do so will be assumed.

4.3.1 Implementing ARGUMENT- φ

The previous section introduced the constraint on prosodic constituency ARGUMENT- φ , repeated below, which requires prosodic structure to correspond to argument structure.

- (152) ARGUMENT CONDITION ON PHONOLOGICAL PHRASING (ARGUMENT- φ): A head and its internal argument(s) must be adjacent sub-constituents of a φ -phrase.

This constraint ensures that the verb and the object are phrased together, as shown in (153). In this example and those that follow, ‘verb’ refers to a complex predicate head that minimally includes V^0 , Asp^0 , T^0 , and C^0 (see Chapter 5 for more information about Niuean clause structure).

(153)

Input: [_{CP} Verb [_{DP} Subject] [_{VP} <i>t</i> _V [_{NP} Object]]]		ARG- φ
a.	(Verb (Subject) φ (Object) φ) _l	*!
b.	☞ ((Verb Object) φ (Subject) φ) _l	
c.	☞ ((Subject) φ (Verb Object) φ) _l	

The constraint in (152) is clearly not the only constraint at play; there also needs to be a way to choose candidate (153b) over candidate (153c), both of which conform to ARGUMENT- φ . PNI structures are VOS, not SVO. In order to distinguish between the optimal candidate (153b) and the alternative candidate (153c), the constraints of Match Theory (Selkirk 2011) will be invoked.

Preventing prosodic restructuring

Other work on the topic of prosodic restructuring posits a distinct constraint that penalizes non-isomorphism between prosody and syntax, as occurs in (153b) and (153c). For example, Bennett et al. (to appear a) use a constraint they call No SHIFT to deter the ‘shifting’ or restructuring of prosodic constituents. Elfner (2012) posits a constraint, LINEAR CORRESPONDENCE, which performs the same function.⁹ However, in the context of Match Theory, specialized constraints such as No SHIFT are somewhat redundant. Whenever prosodic restructuring occurs above the level of the word, at least one member of the family of MATCH constraints (Selkirk 2011) is necessarily violated, because MATCH constraints require isomorphism between prosodic and syntactic structures:

(154) a. MATCH (α , π)

The left and right edges of a constituent of type α in the input syntactic representation must correspond to the left and right edges of a constituent of type

⁹For more examples, see the sources cited in in Bennett et al. (to appear a).

π in the output phonological representation.



b. $\text{MATCH}(\pi, \alpha)$

The left and right edges of a constituent of type π in the output phonological representation must correspond to the left and right edges of a constituent of type α in the input syntactic representation (Selkirk 2011: 20)

This analysis utilizes two of the three syntax-prosody (input-output) correspondence constraints and one prosody-syntax (output-input) correspondence constraint. The first two constraints to consider are i) $\text{MATCH}(XP, \varphi)$, which requires that the left and right edges of XP-constituents correspond to the left and right edges of φ -constituents, and ii) $\text{MATCH}(\varphi, XP)$, which requires that the left and right edges of φ -constituents correspond to the left and right edges of XP-constituents.



The tableau in (155) introduces $\text{MATCH}(XP, \varphi)$ (input-output) and $\text{MATCH}(\varphi, XP)$ (output-input) into the analysis. Both candidate (153b) and candidate (153c) incur a violation of $\text{MATCH}(XP, \varphi)$ and $\text{MATCH}(\varphi, XP)$. In both cases, the object XP does not correspond to a φ -phrase and φ_I does not correspond to a syntactic XP. Instead, φ_I corresponds to the verb and the object, which are not a constituent in the input. A ranking argument in support of an analysis where $\text{MATCH}(\varphi, XP)$ is ranked above $\text{MATCH}(XP, \varphi)$ will come from an example later in the text. For the time being, while candidate (153b) and candidate (153c) have not yet been differentiated, it is clear from (155) that $\text{ARGUMENT-}\varphi$ needs to be ranked above both $\text{MATCH}(XP, \varphi)$ and $\text{MATCH}(\varphi, XP)$ in order for prosodic restructuring to occur.

(155)

Input: [_{CP} Verb [_{DP} Subject] [_{VP} <i>t_V</i> [_{NP} Object]]]	ARG- φ	MATCH (φ , XP)	MATCH (XP, φ)
a. (Verb (Subject) φ (Object) φ) ι	*!		
b.  ((Verb Object) φ !(Subject) φ) ι		*	*
c.  ((Subject) φ (Verb Object) φ !) ι		*	*

MATCH (CP, ι) requires that the left and right edges of syntactic constituents with illocutionary force correspond to the left and right edges of ι -constituents.

(156)

Input: [_{CP} Verb [_{DP} Subject] [_{VP} <i>t_V</i> [_{NP} Object]]]	ARG- φ	MATCH- ι	MATCH (φ , XP)	MATCH (XP, φ)
a. (Verb (Subject) φ (Object) φ) ι	*!			
b.  ((Verb Object) φ (Subject) φ) ι		*	*	*
c.  ((Subject) φ (Verb Object) φ) ι		*	*	*

Whereas pronouncing the object in a position that is adjacent to the verb avoids a violation of MATCH (CP, ι) from the perspective of the left edge, as in (156b), it incurs a violation of MATCH (CP, ι) from the perspective of the right edge.¹⁰ Still, supposing that it is the left edge of the ι -phrase where CP/ ι -phrase isomorphism is most important, MATCH- ι can differentiate between the ‘b’ and ‘c’ candidates.


Referencing a specific boundary in the context of MATCH theory is perhaps an unexpected aspect of the analysis, as a major theoretical contribution of MATCH theory is to move away from individualized/parameterized edge alignment constraints. However, the left-edge of the CP/ ι -phrase is clause-initial; and it has long been known that initial

¹⁰Recall that ‘verb’ in these tableaux refers to a complex predicate head that includes C⁰ (see Chapter 5 for more detail).

positions are privileged at different levels of the prosodic hierarchy. Therefore, if syntax-prosody isomorphism at one boundary were more robustly protected than any other, we would expect it to be the clause-initial boundary, as it is here.

So, if the verb is not pronounced at the left edge of the ι -phrase, then the candidate incurs a violation of $\text{MATCH-}\iota_{\text{Left}}$.¹¹ In (157c), the left edge of the CP does not correspond to the left edge of the ι -phrase, while it does in (157b).

(157)

Input:	ARG- φ	MATCH- ι_L	MATCH (φ , XP)	MATCH (XP, φ)
$[_{CP} \text{ Verb } [_{DP} \text{ Subject }] [_{VP} t_V [_{NP} \text{ Object }]]]$				
a. (Verb (Subject) φ (Object) φ) ι	*!			
b.  ((Verb Object) φ (Subject) φ) ι			*	*
c. ((Subject) φ (Verb Object) φ) ι		*!	*	*

Together, ARGUMENT- φ and MATCH- ι_L can account for the need to incorporate the verb and its internal argument within a single φ -phrase.

Other candidates that satisfy ARGUMENT- φ and MATCH- ι

The next question to answer is why, at least in cases where the incorporated argument is unmodified, the phrasing shown in (158a) is preferred over other possibilities that satisfy both ARGUMENT- φ and MATCH- ι_L . For example, in (158b), the object is pronounced in a nested φ -phrase; and in (158c), both the verb and the object are contained within unique φ -phrases. In each of these cases, the verb and the object are pronounced as adjacent subconstituents of the same φ -phrase, but the constituency within that φ -phrase differs.

¹¹Here, a unidirectional version of the MATCH ι -phrase constraint is used, because it is not necessary to distinguish between syntax-prosody correspondence (MATCH (CP, ι)) and prosody-syntax correspondence (MATCH (ι , CP)) at any part of the analysis.

- (158) a. Attested phrasing:
 $((\text{Verb Object})\varphi(\text{Subject})\varphi)\iota$
- b. Nested object:
 $((\text{Verb} (\text{Object})\varphi)\varphi(\text{Subject})\varphi)\iota$
- c. Nested verb and object:
 $((\text{Verb})\varphi (\text{Object})\varphi)\varphi(\text{Subject})\varphi)\iota$

In fact, (158b), where the object is contained in its own φ -phrase, incurs one less violation, as illustrated by the tableau in (159):

(159)

Input: [_{CP} Verb [_{DP} Subject] [_{VP} <i>t_V</i> [_{NP} Object]]]	ARG- φ	MATCH- ι_L	MATCH (φ , XP)	MATCH (XP, φ)
a. ☹ ((Verb Object) φ (Subject) φ) ι			*	*!
b. ☞ ((Verb (Object) φ) φ (Subject) φ) ι			*	
c. (((Verb) φ (Object) φ) φ (Subject) φ) ι			**!	

In the attested phrasing schematized by candidate (159a), there is a syntactic XP, the object, that does not correspond to a φ -phrase; however, in candidates (159b) and (159c), the object XP does correspond to a φ -phrase. This results in a violation of MATCH (XP, φ) in the case of candidate (159a), but not (159b) or (159c).


One way to ensure that the attested candidate is the winning candidate is to introduce the constraint **STRONG START**.

- (160) **STRONG START** (Selkirk 2011): A prosodic constituent optimally begins with a left-most daughter constituent which is not lower in the prosodic hierarchy than the constituent that immediately follows.

Elfner (2012) proposes a slightly different version of STRONG START that, for present purposes, is interchangeable with Selkirk (2011). Bennett et al. (to appear a) and Harizanov (2013) restrict STRONG START to cases where the relevant constituent is smaller than a prosodic word, which would not apply here.

In the next tableau, the high ranking constraint STRONG START rules out the most isomorphic candidate under consideration (161b), in which the object XP, but not the verb, is contained within a nested φ -phrase.¹² Candidate (161b) violates STRONG START, because the prosodic constituent that contains the verb and the object begins with a prosodic word (TAM+verb) lower in the prosodic hierarchy than the following φ -phrase (object).

(161)

Input:	STR START	MATCH	MATCH
$[_{CP} \text{Verb } [_{DP} \text{Subject}] [_{VP} t_V [_{NP} \text{Object}]]]$		(φ, XP)	(XP, φ)
a.  $((\text{Verb Object})\varphi(\text{Subject})\varphi)_\iota$		*	*
b. $((\text{Verb (Object)}\varphi)\varphi(\text{Subject})\varphi)_\iota$	*!	*	
c. $((\text{Verb})\varphi (\text{Object})\varphi)\varphi(\text{Subject})\varphi)_\iota$		**!	

Also note that the tableau in (161) provides a ranking argument for MATCH (φ, XP) over MATCH (XP, φ) . If the order were reversed, candidate (161c), in which both the verb and the object are produced in their own φ -phrase, would be predicted to surface.

In conclusion, this section demonstrated how the need to satisfy ARGUMENT- φ motivates the phrasing of the verb and its internal argument as adjacent subconstituents of the same prosodic phrase, despite the fact that they are not linearly adjacent in the input. Furthermore, it was shown that a combination of MATCH constraints and STRONG START (Selkirk 2011) determine the specifics of how the prosodic grammar satisfies ARGUMENT-

¹²In the interest of simplicity, ARGUMENT- φ and MATCH- ι_L are not shown in (161), since each of the candidates in this tableau satisfy both of these constraints.

φ . The next section turns to the more foundational question: how does the prosodic grammar know when a verb has an internal argument?

4.3.2 An identity problem

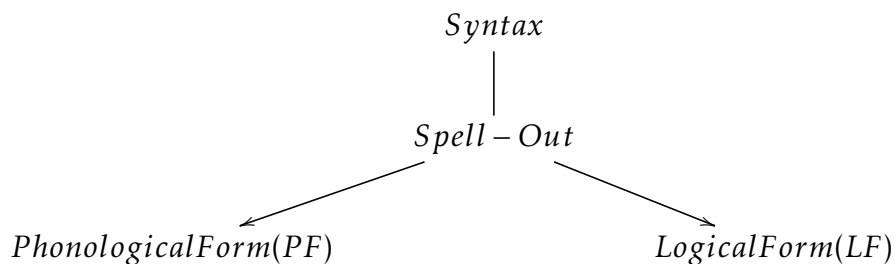
Steedman (1991) proposes to eliminate the semantically defined *Sense Unit Condition* based on his observation that the prosodic component of the grammar can produce the same set of attested and unattested prosodic phrasing even when restricted to syntactic information available from surface constituency. More specifically, he argues that the prosodic grammar does not need to have access to the ‘semantic connection’ between, e.g., a verb and its direct object, because these elements stand in a syntactic head-complement relationship. Steedman’s observation seems accurate in the context of the English and K’ichee’ examples in Section 4.2, where *Sense Units* can be read directly off of syntactic constituency.

If Niuean PNI is to receive a prosodic account based on a version of the *Sense Unit Condition*, surface constituency will not be informative to the prosodic grammar, because internal arguments surface *in situ*, whereas the highest copy of the verb is pronounced *ex situ*, i.e. in its clause-initial position.¹³ In other words, there is no way the prosodic grammar can know that the verb and its object were generated as sister constituents, assuming that the prosodic grammar does not have access to syntactic objects without phonological exponents (Nespor and Vogel 1986), such as the lowest copy of the verb.

It would also be difficult to define ARGUMENT- φ in the way Selkirk (1984) defines the *Sense Unit Condition*, e.g., in terms of head dependencies at the level of logical form, in the context of the Y-Model of grammar (Chomsky and Lasnik 1977; Chomsky 1995), where LF and PF do not interact (162).

¹³This problem exists regardless of whether a trace-based or copy theory of movement is adopted. See Chapter 5 for a head-movement account of Niuean V1.

(162) Y-Model of the grammar (Chomsky 1995)

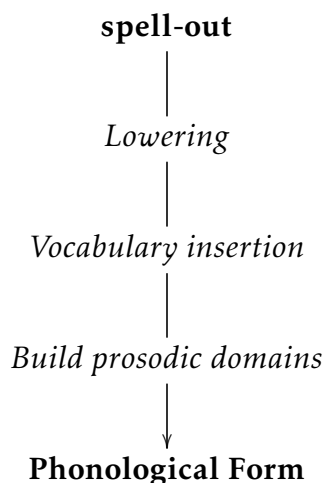


How, then, does the prosodic grammar determine whether or not a verb has any internal arguments, and, in case it does, how does the prosodic grammar identify them? One possibility is that the prosodic grammar can access the base position of the verb. Following this line of reasoning would require endowing the prosodic grammar with the ability to i) reference syntactic positions without phonological exponents and ii) infer a head-argument relation based on the structural configuration of the verb and any VP-internal nominals. In the context of the Y-Model, this type of solution would result in undesirable PF/LF redundancy, since LF needs to be able to access the base position of moved constituents for reasons of interpretation (e.g., in cases of A'-movement).

A Single Output Syntax (Lidz and Idsardi 1998; Bobaljik 1995, 2002) would not require either of the aforementioned stipulations; in this type of model, PF can identify whether a verb and an NP/DP have been sisters at any point in the derivation. It is not my intention to enter the debate about the form of syntactic output with these data. However, I will demonstrate that it is possible to construe the ARGUMENT CONDITION ON PHONOLOGICAL PHRASING in the context of the Y-Model of grammar, as there is value in demonstrating that the proposal can be implemented in either major theory concerning the architecture of the grammar.

The explanation pursued here relies on features; crucially, it relies on the idea that at least some morphological features, specifically categorial features, are accessible to the building of prosodic structure. This position is potentially inconsistent with approaches to PF in which vocabulary insertion takes place before prosodic domains are built (163).

(163) Model of PF (Embick and Noyer 2001)



Vocabulary insertion is often conceptualized as the replacement of morphological features with phonological exponents. Therefore, it is unclear how the shape of sentence-level prosodic constituents, which are built on phonological exponents, could be influenced by abstract morphological features, since morphological features and phonological exponents do not coexist according to this view. Yet, in certain cases, vocabulary insertion actually depends on prosodic structure, as in the K'ichee' data discussed in (4.2).¹⁴ Examples like one cast doubt on a strict interpretation of the view espoused in (163).

If the prosodic analysis of Niuean PNI proposed here is going to be successful, the prosodic grammar needs access to at least one type of morphological feature, in addition to phonological exponents, at the point when prosodic constituency is established. Specifically the prosodic grammar needs access to features that designate lexical class.

Granting the prosodic grammar access to lexical class information does not entail lexical class-based prosodic constraints.¹⁵ However, there is considerable cross-linguistic

¹⁴See Gribanova and Harizanov (to appear) for further discussion on whether morphological features remain visible after vocabulary insertion and Henderson (2012) for a discussion of the implications of the K'ichee' data for a derivational model of the PF branch of the grammar.

¹⁵For two different perspectives on the issue of lexical class at the syntax-prosody interface, see Truckenbrodt (2007), in which the relevance of lexical class distinctions to

evidence for category-specific effects in prosodic phenomena (Kaisse 1985; Nespor and Vogel 1986; Smith 1997, 2011 and sources cited therein). In any case, it is necessary to posit that at least some prosodic structure is built with access to at least some features. For this reason, an OT model of PF is preferable to a strictly derivational one, as it is not clear how a strictly derivational model of PF could account for situations where vocabulary insertion is dependent on prosodic structure and the building of prosodic domains is sensitive to syntactic features.

In the analysis pursued in Section 4.3.3, c-selection shares the same implementation as feature valuation more generally (see Chomsky 1965 for an early formulation of this idea; see also Emonds 2000 and Adger and Svenonius 2011). In turn, feature valuation is realized as feature sharing (as in Pesetsky and Torrego 2007). Thus, the prosodic grammar connects the *ex situ* verb and its internal argument via a common lexical feature.

4.3.3 C-selection and feature sharing

This section illustrates how i) treating categorial selection (c-selection) as an instance of AGREE (Emonds 2000; Adger and Svenonius 2011; among others) and ii) adopting a feature sharing approach to AGREE (Pesetsky and Torrego 2007) makes it possible to capture the essence of Selkirk’s proposal in the context of a grammatical model where LF and PF do not interact.

Pesetsky and Torrego (2007) propose the following modification to Chomsky’s (2000, 2001) definition of AGREE:

(164) AGREE (Pesetsky and Torrego 2007)

- a. An unvalued feature F (a *probe*) on a head H at syntactic location α (F_α) scans its c-command domain for another instance of F (a *goal*) at location β (F_β) with which to agree.

the prosodic grammar are embraced, and Selkirk (2011), in which the relevance of lexical class distinctions is minimized.

- b. Replace F_α with F_β so that the same feature is present in both locations.

In Chomsky's (2000, 2001) AGREE, F_α is deleted once it receives a value from F_β . For present purposes, the important difference between Pesetsky and Torrego's (2007) definition of AGREE and Chomsky's (2000, 2001)'s version is that Pesetsky and Torrego's AGREE establishes a lasting link between the probe and the goal, treating the probe as any instance of an unvalued feature. A more general definition of probe is any instance of an unvalued, uninterpretable, or strong feature. If such a general definition of *probe* is adopted, it is possible to combine Pesetsky and Torrego's (2007) definition of AGREE with an early account of c-selection that has recently regained favor.

C-selection refers to the process whereby a head merges with a particular lexical category (or categories, in some cases). For example, the English verb 'confide' can merge with a PP or a PP and a DP, but not just a DP (165).

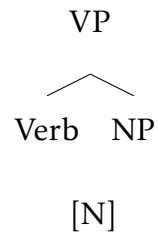
(165) C-selection and 'confide'

- a. You should confide in a friend.
- b. You should confide your secret to a friend.
- c. *You should confide your secret.

One way to treat c-selection syntactically is to subsume it under feature-checking (e.g., Chomsky 1965; Emonds 2000; Adger and Svenonius 2011, among others). Under this sort of analysis one claims that the English verb 'confide' enters the derivation with either a [uP] feature or a [uP] and a [uD] feature. Chomsky's definition of AGREE would dictate that the uninterpretable (categorical) feature on the selecting head (e.g., a verb) deletes after it merges with a head bearing the interpretable version of the matching feature. When Pesetsky and Torrego's AGREE is applied to c-selection, the verb merges with a head bearing the interpretable version of the categorical feature it is selecting for, AGREE applies, and the verb and its complement then share the complement's categorical feature between them. The second scenario is represented in (166), where the verb and the noun

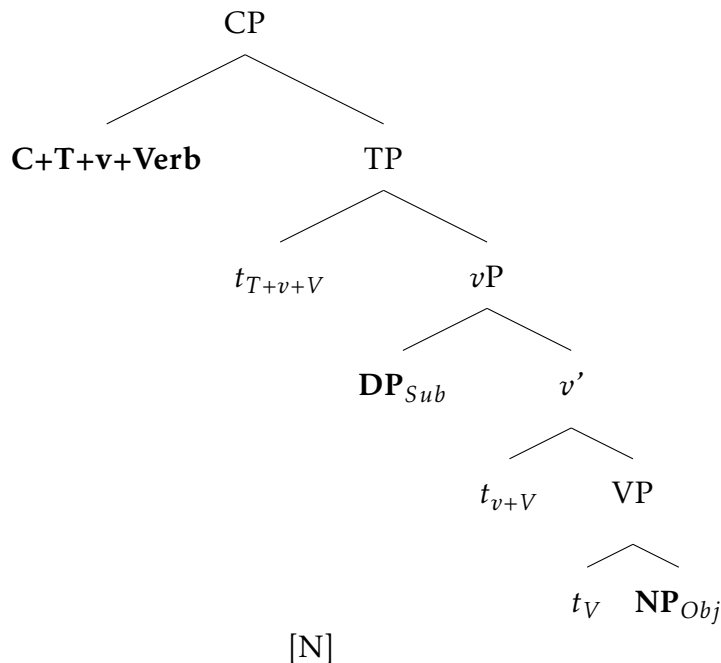
are shown to share the noun's [N] feature.

(166) Feature sharing and c-selection



Thus, if a verb enters the derivation with a [*u*N] feature, selects an NP with the feature [N], and then undergoes head movement to a position higher in the clause, the feature [N] will be shared by the following positions (167):

(167) Feature sharing and V⁰-raising



It is now possible to revise the definition of the ARGUMENT CONDITION so that PF, in a Y-Model of the grammar, can make reference to head-argument pairs, even when the selecting head has moved out of the position in which it selected its internal arguments.

(168) ARGUMENT CONDITION ON PHONOLOGICAL PHRASING: A head H with a categorial feature [c] and head C with the same [c] feature must constitute a φ -phrase.

The tableau in (169) is an updated version of (157). It shows the categorial feature that is relevant to the assignment of a prosodic structure that complies with ARGUMENT- φ . For ease of explication, the relevant feature is shown in two locations in (169), representing the fact that syntactic constituents at these two locations share a single feature.

(169)

Input:	ARG- φ	MATCH- ι_L	MATCH	MATCH
$[_{CP} \text{Verb}_N [_{DP} \text{Subject}] [_{VP} t_V [_{NP} \text{Object}_N]]]$			(φ, XP)	(XP, φ)
a. $(\text{Verb}_N (\text{Subject})\varphi(\text{Object}_N)\varphi)\iota$	*!		*	
b. $((\text{Verb}_N \text{Object}_N)\varphi(\text{Subject})\varphi)\iota$			*	*
c. $((\text{Subject})\varphi(\text{Verb}_N \text{Object}_N)\varphi)\iota$		*!	*	*

For each of the candidates in (169), two constituents (the verb and the object) bear matching [N] features. Therefore, in order to satisfy ARGUMENT- φ , they must surface as adjacent sub-constituents of a common φ -phrase. Both candidates (169b) and (169c) satisfy this constraint. As before, the object shifts to the verb and not vice versa, in order to preserve isomorphism between the left edge of the CP and the left edge of the ι -phrase. As such, candidate (169b) is the optimal candidate.

This section solved the identity problem faced by a modern adaptation of Selkirk's *Sense Unit Condition* (1984): how can PF know that non-adjacent syntactic constituents form a head-argument pair? The account presented in this section does not rely on the introduction of a new feature or the assignment of a new role to an existing feature. C-selection has always referred to the process whereby a head selects an internal argument. The particular take on the mechanics of c-selection presented in this section extends the idea of feature sharing (Pesetsky and Torrego 2007), with the result that PF can make reference to the unique relationship between a head and its internal argument(s). As noted by Steedman (1991), PF could already identify heads and their internal arguments

whose local configuration was uninterrupted by movement. However, the present account works equally well in situations where the relevant head and internal argument(s) surface in situ and ex situ.

One problem remains: according to the account as it has been presented thus far, we would expect ARGUMENT- φ to trigger PNI between a verb and, contrary to fact, any internal argument. Thus, while PNI only occurs with internal arguments of the category NP, as it stands, this account predicts PNI to arise in cases of DP and CP internal arguments as well, e.g., DP direct, middle, and instrumental objects, as well as clausal arguments. The tableau in (170) presents an example with a DP object to illustrate the problem.

(170)

Input: [_{CP} Verb _D [_{DP} Subject] [_{VP} <i>t_V</i> [_{NP} Object _D]]]	ARG- φ	MATCH- l_L	MATCH (φ , XP)	MATCH (XP, φ)
a. ☹ ((Verb _D) φ (Subject) φ (Object _D) φ) l	*!			
b. ☹ ((Verb _D Object _D) φ (Subject) φ) l			*	*
c. ((Subject) φ (Verb _D Object _D) φ) l		*!	*	*

The only difference between the tableau in (170) and the one in (169) is that the categorial feature of the internal argument is [D] as opposed to [N]. However, PNI only occurs with NP internal arguments. As such, the analysis is incomplete.

The next section presents a phase-based account of the mismatch between where PNI actually occurs and where ARGUMENT- φ predicts that it should occur. Once a phase is spelled out and prosodic structure is assigned, syntactic features, such as categorial features, are no longer available. Because DP arguments and clausal complements are phases, they are assigned prosodic structure before the verb with the matching categorial feature is spelled out. Because NP arguments are not phases, they are spelled out in the same phase as the verb. Thus, only in a situation where the verb shares a categorial fea-

ture with an NP argument will both instances of the relevant feature be available for the assignment of prosodic domains at PF.

4.4 Multiple Spell-Out

The basic intuition behind Multiple Spell-Out (Uriagereka 1999), the Phase Impenetrability Condition (Chomsky 2000, 2001), and earlier renditions of similar ideas is that the clausal derivation proceeds in stages. Syntactic domains are not transferred to the interfaces all at once when the clausal derivation is complete, but are instead transferred one phase at a time.¹⁶

From the perspective of syntax, the major consequence of Multiple Spell-Out is that syntactic objects become inaccessible once they begin the process of becoming phonological objects. However, syntactic objects at the edge of a phase remain available for participation in the full range of syntactic processes. Syntacticians have focused primarily on developing this idea into an account of successive cyclic movement and related phenomena (Uriagereka 1999, Chomsky 2000, 2001, Fox and Pesetsky 2005, a.o.).

4.4.1 Consequences for the syntax/prosody interface

Multiple Spell-Out has had arguably less effect on theories of the phonological component of the grammar than on the syntactic module, perhaps because phonological operations tend to be more locally construed.¹⁷ Just as Multiple Spell-Out offers a phrase-level structural explanation for why certain syntactic constituents are unavailable to certain

¹⁶See Boeckx and Grohmann (2007) for a discussion of how Multiple Spell-Out and phases are related to earlier theories.

¹⁷Boeckx (2007) expresses the opposite intuition when he posits that PF needs to be able to access the whole syntactic derivation, for example, in order to assign intonational tunes. However, this particular objection seems to depend on a strictly derivational view of the prosodic component of the grammar and is not relevant in an OT-style approach to prosodic structure building like the one adopted here.

syntactic processes, e.g., movement, it has the potential to do the same for syntactic constituents that are invisible to the application of certain prosodic rules.

For example, Arregi (2004) argues that phrase-level stress in Northern Bizkaian Basque cannot be assigned to phonological exponents that correspond to syntactic constituents in an island that is dominated by another island. Thus, embedded islands are invisible to the assignment of phrase-level stress. If island effects result from the timing of spell-out, Arregi's analysis of phrasal stress in Northern Bizkaian Basque provides evidence in support of the idea that the application of prosodic rules is also constrained by spell-out.

One conclusion to draw from Arregi (2004) is that spell-out renders certain constituents invisible to the prosodic grammar. Multiple Spell-Out can also explain why some constituents are instead visible to the prosodic grammar by virtue of being at the edge of a spell-out domain. For example, Kratzer and Selkirk (2007) develop a phase-based approach to stress assignment, where only the highest phrase of the relevant domain is accessible, i.e., the 'edge'-phrase. Phase-based approaches to prosodic 'edge' phenomena have also been proposed for the contraction of finite auxiliaries and infinitival *to* in English (e.g., Radford 2000, Sato 2012).

In what follows, I elaborate on the prosodic account of Niuean PNI, incorporating the notion that Multiple Spell-Out renders certain constituents invisible to prosodic restructuring. Specifically, the syntactic features of constituents which have already been assigned prosodic structure become invisible to any subsequent assignment of prosodic structure. The previous subsection posited that certain syntactic features, such as those pertaining to lexical class, are visible to PF at the point when prosodic structure is first assigned. This position has been taken elsewhere in the literature and it is essential to the prosodic account of Niuean PNI, because it allows PF to identify head-argument relations between non-adjacent syntactic constituents.

Whereas the notion of inaccessibility in the context of Multiple Spell-Out is generally meant to apply to syntactic operations, on the present account, a syntactic object that has

already been parsed into prosodic structure becomes inaccessible to the computation of the next phase of prosodic structure. This does not mean that prosodic structure cannot be reanalyzed as the derivation progresses, just that there is a point after which prosodic restructuring can no longer make reference to syntactic objects.

4.4.2 Multiple Spell-Out and PNI

The literature contains competing perspectives on i) what constitutes a phase head; ii) what constitutes a spell-out domain, and iii) what triggers the transfer of spell-out domains to the interfaces.

First, I will assume, as is standard, that C^0 and v^0 are phase heads. In addition, I necessarily adopt the position that D^0 is a phase head (Chomsky 2001; Dobashi 2003; Svenonius 2004; Hiraiwa 2005), in order to attribute the difference between NP and DP objects to the timing of Spell-Out. In contrast, the analysis presented in this chapter does not depend on whether or not unaccusative v^0 is a phase head.¹⁸

Next, I take the position that the entire phase spells out when the trigger is merged (see below), as opposed to just the complement of the phase head. See Svenonius (2004) for confirmation that edge effects can still be accounted for even when the whole phase is spelled out, as long as the revised version of the PIC is adopted.

Finally, with respect to what triggers the transfer of a spell-out domain to the interfaces, the literature on Multiple Spell-Out has two answers: the spell-out domain is either transferred to the interfaces when its phase head is introduced, as in the original Phase Impenetrability Condition (PIC) (Chomsky 2000) or ii) when the next phase head is introduced, as in the revised PIC (Chomsky 2001):

¹⁸However, if unaccusative constructions were to differ from unergative constructions such that unaccusative verbs were phrased with their arguments, while unergative verbs were not, this fact could be construed to support the position that unaccusative v^0 is not a phase head (Chomsky 2001). But see Legate 2003 and Gallego 2010 for the view that all verb phrases include a phase head.

(171) The Phase Impenetrability Condition

a. Phase Impenetrability Condition (original) (Chomsky 2000):

In phase α with head H, the domain of H is not accessible to operations outside of α , only H and its edge [its specifier(s)] are accessible to such operations.

(Chomsky 2000: 108)

b. Phase Impenetrability Condition (revised) (Chomsky 2001):

The domain of H is not accessible to operations at ZP [a phase]; only H and its edge are accessible to such operations.

(Chomsky 2001: 14)

I adopt the revised version of the PIC, which Chomsky proposes in part to account for the possibility of raising out of an infinitive. Asarina (2011) and Asarina and Hartman (to appear) use the fact that agreement and genitive case assignment in Uyghur can cross a CP boundary to argue for the revised version of the PIC. Richards (2004, 2011) argues for the revised PIC on empirical and conceptual grounds.

Note that the original formulation of the PIC cannot capture the contrast between nominal arguments headed by D^0 and those headed by N^0 . If transitive v^0 were to trigger the spell-out of its complement, the spell-out timing for NP and DP complements would be the same. However, if one phase were spelled out only after the following phase entered the derivation, then the spell-out of a DP complement would be triggered by the introduction of the phase head v^0 , while the spell-out of an NP complement would not occur until C^0 entered the derivation. The difference between the spell-out timing of NP complements and that of DP complements is schematized in (172) and (173). Spelled out material is represented with the empty set symbol, and phases are underlined.

(172) Spell-out timing for NP complement (173) Spell-out timing for DP complement

- | | |
|---|--|
| <p>a. $[_{VP} V [_{NP} N]]$</p> <p>b. $[_{vP} v [_{VP} V [_{NP} N]]]$</p> <p>c. $[_{TP} T [_{vP} v [_{VP} V [_{NP} N]]]]$</p> <p>d. $[_{CP} C [_{TP} T [\emptyset]]]]$</p> | <p>a. $[_{VP} V [_{DP} D [_{NP} N]]]$</p> <p>b. $[_{vP} v [_{VP} V [\emptyset]]]]$</p> <p>c. $[_{TP} T [_{vP} v [_{VP} V [\emptyset]]]]]]$</p> <p>d. $[_{CP} C [_{TP} T [\emptyset]]]]]]$</p> |
|---|--|

The mock derivations depicted above are crucially different at steps ‘b’ and ‘c,’ where the verbal complement is spelled out in (173) but not in (172).

All of the components of the analysis have now been introduced, in the next section I work through a derivation of the prosodic analysis of Niuean PNI, as well as a derivation of a VSO clause where PNI fails to apply despite the presence of a head-argument pair.

4.5 Sample derivations

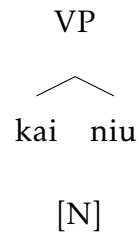
4.5.1 Prosodic account of PNI: start to finish

This section reviews the prosodic account of Niuean PNI from start to finish by presenting the derivation of a PNI-abs sentence exemplified in (178).

- (174) Kua kai niu e tama.
 PFV eat coconut ABS child.
 ‘The child ate coconut.’

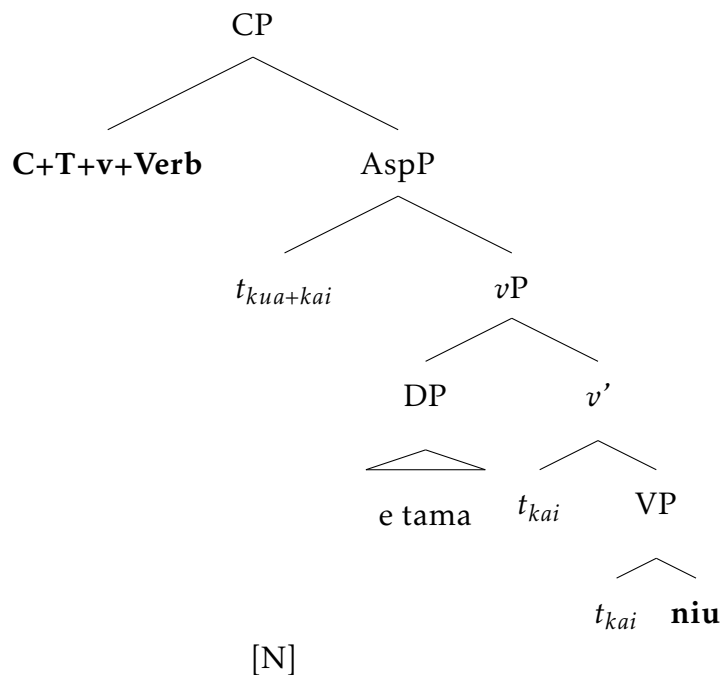
The verb *kai* ‘eat’ enters the derivation with a $[uN]$ feature. Once the verb merges with *niu* ‘coconut,’ the same $[N]$ feature is present in both locations:

(175) *In situ* location of verb and NP object




The verb undergoes a series of X^0 -movements, eventually landing in CP.

(176) Feature sharing and V^0 -raising with NP object



Once C^0 , which is null in this example, is merged, the clause spells out. The tableau in (177) demonstrates the role of ARGUMENT- φ in determining the prosodic structure.

(177)

Input:	STR	ARG- φ	MATCH- ι_L	MATCH	MATCH
$[_{CP} \text{ kua kai}_N [_{DP} \text{ e tama}] [_{VP} t_V [_{NP} \text{ niu}_N]]]$	START			(φ, XP)	(XP, φ)
a. $(\text{kua kai}_N (\text{e tama})\varphi (\text{niu}_N)\varphi)\iota$	*!	*			
b. $((\text{kua kai}_N)\varphi (\text{e tama})\varphi (\text{niu}_N)\varphi)\iota$		*!			
c. $((\text{kua kai}_N (\text{niu}_N)\varphi)\varphi (\text{e tama})\varphi)\iota$	*!			*	
d. $(((\text{kua kai}_N)\varphi (\text{niu}_N)\varphi)\varphi (\text{e tama})\varphi)\iota$				* *!	
e.  $((\text{kua kai}_N \text{niu}_N)\varphi (\text{e tama})\varphi)\iota$				*	*
f. $((\text{e tama})\varphi (\text{kua kai}_N \text{niu}_N)\varphi)\iota$			*!	*	*

Thus, examples like the one in (178) are assigned the following prosodic structure:

- (178) $((\text{Kua kai niu})_\varphi (\text{e tama})_\varphi)_\iota$.
 PFV eat coconut ABS child.
 ‘The child ate coconut.’

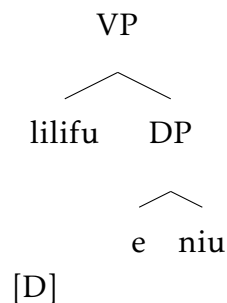
4.5.2 Where PNI fails to occur

This section works through a derivation of an instance where PNI fails to occur. In this case, prosodic domains are assigned without restructuring, and VSO surfaces (179).

- (179) $\text{Kua kai he tama e niu}$.
 PFV eat ERG child ABS coconut.
 ‘The child ate coconut.’

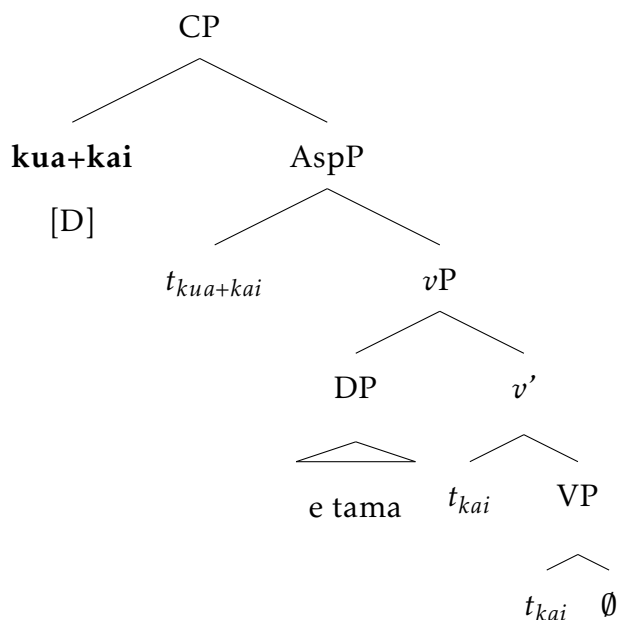
The verb *kai* ‘eat’ enters the derivation with a $[uD]$ feature. Once the verb merges with the DP *e niu* ‘the coconut,’ the feature $[D]$ is present in both locations:

(180) *In situ* location of verb and DP object



As in the derivation of PNI-abs, the verb in the incipient VSO structure undergoes a series of X^0 -movements, eventually landing in CP. The DP object is represented with the empty set symbol, as it was spelled out with the completion of the phase headed by v^0 .

(181) Feature sharing and V^0 -raising with DP object



Once C^0 is merged, the clause spells out. The tableau in (182) demonstrates how ARGUMENT- φ does not influence the way prosodic structure is built in this example. None of the candidates in (182) violate ARGUMENT- φ , because at this point, there is only one instance of [D]. The object is represented with an empty set symbol contained in a φ -phrase. This is meant to emphasize the fact that the DP object's syntactic features are no

longer visible, because it was assigned prosodic structure in an earlier phase.

(182)

Input:	STR	ARG- φ	MATCH- l_L	MATCH	MATCH
$[_{CP} \text{ kua kai}_D [_{DP} \text{ e tama}] [_{VP} t_V [_{DP} \emptyset]]]$	START			(φ, XP)	(XP, φ)
a. $(\text{kua kai}_D (\text{e tama})\varphi (\emptyset)\varphi)_l$	*!				
b. $\text{↗} ((\text{kua kai}_D)\varphi (\text{e tama})\varphi (\emptyset)\varphi)_l$				*	
c. $((\text{kua kai}_D (\emptyset)\varphi)\varphi (\text{e tama})\varphi)_l$	*!			*	
d. $(((\text{kua kai}_D)\varphi (\emptyset)\varphi)\varphi (\text{e tama})\varphi)_l$				**!	
e. $((\text{kua kai}_D \emptyset)\varphi (\text{e tama})\varphi)_l$				*	*!
f. $((\text{e tama})\varphi (\text{kua kai}_D \emptyset)\varphi)_l$			*!	*	*

In order to satisfy the highly ranked constraint **STRONG START**, the winning candidate in (182) includes a φ -phrase that does not correspond to a syntactic XP, i.e., it violates **MATCH** (φ, XP) by ‘adding’ a φ -phrase. The phonetic data in Chapter 3 support this analysis, because there is a pitch accent on the verb in VSO examples, even though the verb does not correspond to an XP. In PNI examples, the winning candidate satisfies **STRONG START** by including a syntactic XP that does not correspond to a φ -phrase, thereby violating **MATCH** (XP, φ) by ‘deleting’ a φ -phrase. The fact that there are different ways to repair violations of **STRONG START** supports the claim that **STRONG START** is a high ranking constraint in Niuean.

Finally, examples like the one in (179) are assigned the following prosodic structure:

- (183) $((\text{Kua kai})\varphi (\text{he tama})\varphi (\text{e niu})\varphi)_l$.
 PFV eat ERG child ABS coconut.
 ‘The child ate coconut.’

4.6 Conclusion

This chapter presented a novel analysis of Niuean VOS based on the prosodic well-formedness condition ARGUMENT- φ . Because ARGUMENT- φ mandates that verbs be phrased in the same φ -phrase as their arguments, NP objects move into a position that is adjacent to the verb at the point when prosodic structure is assigned. Even though the verb and its argument are not in their original structural configuration when they are sent to PF, positionally motivated categorical features encode their relationship in a way that PF can make reference to it. Finally, the fact that DP objects do not restructure in the same way as NP objects results from cyclic transfer of syntactic information to PF. Once a constituent receives prosodic structure, syntactic features are no longer visible. By the time the verb spells out, the DP object has already received prosodic structure. Hence, PF can no longer see that the verb and the object were in the sort of head-argument relationship that must be phrased together.

Chapter 5

Head-raising account of Niuean V1

5.1 Introduction

Massam (2000, 2001, 2005, et seq.) maintains a VP-raising analysis of Niuean V1 that is in large part motivated by the morphosyntax of pseudo noun incorporation (PNI). Once PNI is given a prosodic analysis, however, a head-raising analysis of Niuean V1—thus a V^0 -raising analysis—becomes possible. This chapter identifies a few problems that the VP-raising analysis creates for the syntax of Niuean and outlines solutions that the V^0 -raising approach offers.

First, the V^0 -raising analysis eliminates a considerable amount of phonologically vacuous structure. For example, in the VP-raising analysis, null T^0 attracts the predicate to its specifier, while the actual tense particles are generated in an extended CP projection. Thus, a strange situation arises in which Niuean's overt tense markers are never hosted by T^0 . Similarly, the VP-raising analysis posits a series of null v^0 s, designed to provide landing sites for the VP as it rolls up the clause; however, Niuean also has several overt v^0 s, which never host the rolled-up VP. The VP-raising analysis requires this extra functional structure in order to derive the attested word order and the inverse scope of postverbal particles; as this chapter will demonstrate, the V^0 -raising analysis arrives at the same

end with less phonologically vacuous structure.

Second, the V^0 -raising analysis eliminates the problem of object evacuation. Under the VP-raising analysis, VPs that belong to complex predicates undergo a series of roll-up movements before the DP object evacuates. Many researchers consider movement out of a moved-constituent to be illicit (see, for instance Culicover and Wexler 1977 and Wexler and Culicover 1980's Freezing Principle and discussion in Londahl 2011). In this case, the VP-raising analysis incorrectly predicts that moving an object out of a rolled-up VP should result in island effects. The V^0 -raising analysis does not face this challenge, because the verb and the object never move as a unit.¹

Finally, the V^0 -raising analysis provides a better correspondence between the semantic identities of various preverbal and postverbal particles and the syntactic projections in which they are generated. For example, particles that locate a proposition in time are generated in TP, not CP, under this analysis. Furthermore, postverbal items associated with aspect, such as the perfective marker *tuai* and the aspectual/temporal adverbs, can be readily affiliated with AspP; such an affiliation would be difficult, and perhaps impossible, within the VP-raising account.

The bulk of this chapter is organized around the different components of the verbal complex. Section 5.2 discusses preverbal particles and secondary predicates;² specifically, Section 5.2.1 discusses the class of secondary predicates descriptively referred to as preverbs. Section 5.3 builds on this discussion by explaining how the V^0 -raising account of preverbs allows for a simpler analysis of tense-aspect-mood.

Section 5.4 discusses postverbal particles and secondary predicates, demonstrating

¹The evacuation problem not only affects direct objects in VSO clauses, but also non-core arguments in VSOX and VOSX clauses, as discussed in Section 2.3.1. However, since grammatical theories tend to allow less variation with regard to where core arguments (e.g., direct objects) are base-generated, as opposed to where non-core arguments (e.g., certain types of PP arguments) are base-generated, I take the problem of object evacuation to be of primary importance.

²The term “secondary predicate” is used here quite literally: it refers to the member(s) of a complex predicate that modify the main predicate.

that it is possible to capture both the surface order and scopal properties through a V^0 -raising account. Section 5.4.2 argues that the V^0 -raising analysis is an improvement over the VP-raising analysis of postverbal secondary predicates, since it eliminates the problems of object evacuation and vacuous structure (cf. Rackowski and Travis 2000 and Massam 2013).

Section 5.4.4 argues that the postverbal perfective marker *tuai* is generated in AspP with the preverbal perfective marker *kua*, in the spirit of French *ne...pas*, and addresses the position of aspectual/temporal adverbs. The status of standard negation in Niuean is addressed in Section 5.5. Preliminary evidence suggests that the negative marker *nākai* is a restructuring verb.

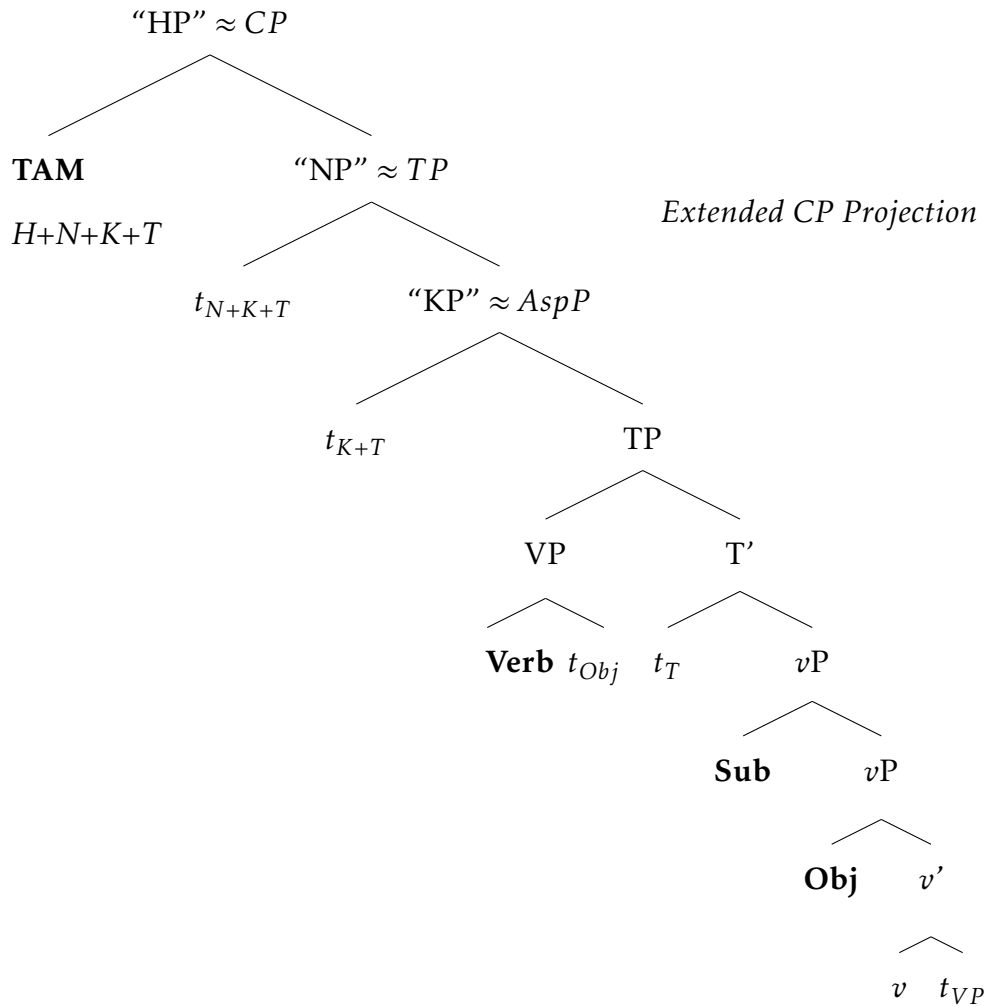
The remainder of the present section provides a more detailed overview of the V^0 - and VP-raising accounts of V1 in the context of Niuean (5.1.1) and also introduces the different components of the Niuean verbal complex (5.1.2).

5.1.1 V- vs. VP-raising

Example (184) provides a more detailed illustration of the VP-remnant movement derivation of Niuean VSO than was given in previous chapters (compare (51) from Chapter 2).³ Following Massam (2009b), the TAM markers in (184) are shown arriving in their final position via head movement, while the predicate reaches its surface position via phrasal movement. From this point forward, the predicate-fronting account will be referred to as the X^0 /XP-raising account, as compared to the uniform X^0 -raising account advocated for in this chapter.

³The tree in (184) shows the VP fronting to the specifier of TP, as in Massam (2001). This is a simplification of Massam's revised analysis, which minimally requires roll-up movement of VP through one vP and evacuation of the object out of the moved VP. See section (5.4) for more on roll-up movement and object evacuation.

(184) VSO via X^0 /XP-raising



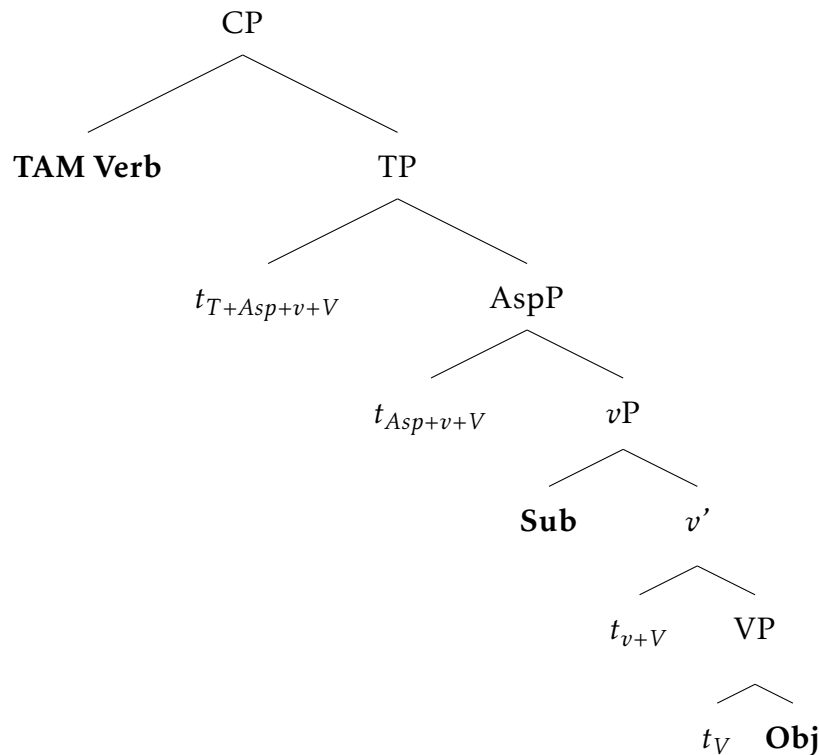
According to Massam (2009b), T^0 is a null head with an EPP feature that attracts the predicate to its specifier. Subsequently, T^0 undergoes head movement to the extended CP projection. The extended CP projection consists of “KP” (CP), “NP” (TP), and “HP” (AspP), named for individual TAM morphemes in Niuean (see the chart in (188)). Thus, what Seiter (1980) and others treat as a single TAM marker, Massam decomposes into a complex head. Depending on the context, any or all of the component heads may be null, and the lower T^0 is always null.

The X^0 /XP-raising analysis necessarily posits two separate heads for tense/inflection, because i) the EPP feature on T^0 motivates predicate fronting, but ii) preverbs and nega-

tion can intervene between TAM and the fronted predicate. Thus, Massam (2009b) concludes that the actual tense morpheme is generated higher than the lower, EPP-bearing T^0 . The location of TAM markers will be discussed in more detail in Section 5.3.

In contrast to the tree in (184), which represents an analysis utilizing both X^0 - and XP-raising, the tree in (185) introduces the uniform X^0 -movement analysis of Niuean clause structure pursued in this chapter. The uniform X^0 -raising analysis adopts the morphological account of TAM markers introduced above, but does not require two separate tense heads or an extended CP projection. In short, this simplification is made possible because the predicate in the X^0 -raising account moves to T^0 , rather than spec,T (again, see Section 5.3).

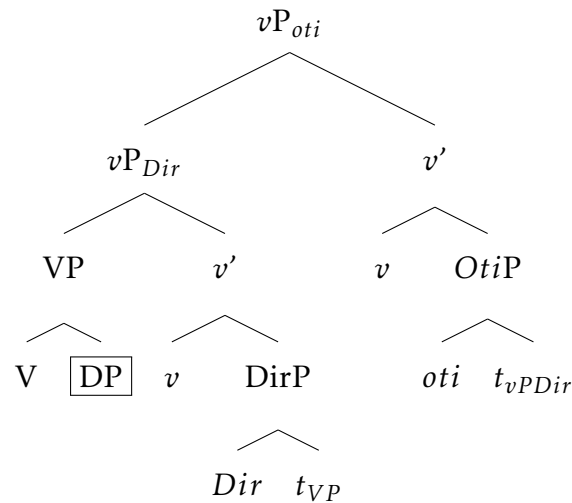
(185) VSO via V^0 -raising



Another noteworthy difference between (184) and (185) is the position of the object. In (184), VSO word order is achieved when the DP object leaves the VP, a movement which

is motivated by the object's need to be in a local configuration with the absolutive case assigning v^0 (Massam 2001). However, when a VSO clause contains a complex predicate consisting of a main verb and a postverbal secondary predicate, Massam (2010, 2013) adds roll-up movement to the predicate fronting account. Example (218) illustrates a portion of the “roll-up” type structure that Massam proposes for a hypothetical complex predicate consisting of a main verb and two postverbal particles: a directional particle and *oti* ‘all.’

(186) Roll-up movement account of postverbal particles



In case the predicate is complex, the DP (shown in a box, above) must do one of the following: i) evacuate the VP after the VP moves to spec, v ; ii) move before the case-assigning head enters the derivation; iii) originate outside of the VP. Section 5.4.1 addresses why each of these scenarios is problematic.

The trees in (184) and (185) display a greatly simplified predicate structure; the next section begins to address the actual complexity of the Niuean verbal complex.

5.1.2 Niuean verbal complex

The Niuean predicate can be quite simple and consist of only a main verb; or it can be quite complex. Each element in (187a) can precede the verb, while those in (187b) can follow the verb or the incorporated argument in the case of PNI. Secondary predicates are underlined.⁴

(187) Niuean verbal complex

a. Preverbal: TAM – NEG – Restructuring Verbs

b. Postverbal: MAN/DIR – APPL – oti – RP – Asp Adv – EMPH – PFV – INTERR

The rest of this section provides an introduction to the different components of the verbal complex, most of which will be discussed more thoroughly in Sections 5.2 and 5.4.

Overview of preverbal particles

Most clauses contain one or more TAM markers with semantic values corresponding to force, tense, and aspect. The chart in (188) shows the possible TAM combinations matrix and dependent clauses. The chart is largely based on Massam (2009b), but see also Seiter (1980) and Massam and Starks (2008). Unlike Massam (2009b), where TAM markers are generated in an extended CP, (188) positions these particles in C⁰, T⁰, and Asp⁰.

⁴See Massam (2013) for an analysis of complex predicates in Niuean. For more on complex predicates in Oceanic languages, see Bril and Ozanne-Rivierre (2004), Crowley (1987, 2002), Durie (1988, 1997), Early (1993) and Bradshaw (1993).

(188) a. Matrix TAM markers⁵

C⁰	T⁰	Asp⁰	Gloss
		<i>kia</i>	exhortative
		<i>kua</i>	perfective
	<i>ne</i>		past
	∅		present
	<i>to</i>		FUT
<i>hā</i>	<i>ne</i>	(<i>fā e</i>)	progressive
<i>hā</i>		<i>kua</i>	factive
<i>nakai</i>			interrogative
<i>kia</i>			interrogative
<i>kā</i>			interrogative

b. Dependent TAM markers⁶

C⁰	T⁰	Asp⁰	Gloss
	<i>ke</i>		dependent tense
	<i>ne</i>		realis (relative)
	<i>ne</i>	<i>kua</i>	perfective (relative)
	<i>ka</i>		future (relative)
<i>ā</i>		<i>kua</i>	subjunctive
<i>ā</i>		<i>kia</i>	exhortative

⁵Although exhortative markers are generally associated with C⁰, *kia* can cooccur with the dependent complementizer *ā*. As such, it will be represented as aspectual.

⁶The particle *ke* is commonly glossed as subjunctive. However, the term “dependent tense” is preferable, since *ke* is not restricted to a particular mood.

The standard negation marker follows the TAM markers comes (189).

- (189) Kua nākai gahua mitaki e tau hokohoko he tino haana.
 PFV NEG WORK MAN ABS PL nerves GEN body POSS
 ‘His nerves are not functioning well.’ (Sperlich 1997: 123)

In clauses without overt preverbal TAM markers, the negative marker is optionally realized as *ai* instead of *nākai* (190).

- (190) a. Ai manako lahi a mautolu ke kai.
 NEG want great ABS 2PL.EX DEP.T eat
 ‘We don’t really want to eat.’ (Sperlich 1997:117)
- b. Nākai manako lahi a mautolu ke kai.
 NEG want great ABS 2PL.EX DEP.T eat
 ‘We don’t really want to eat.’

The slot following negation belongs to a class of secondary predicates that Massam (2013) refers to pretheoretically as ‘preverbs’ and Seiter (1980) and Sperlich (1997) treat as members of a larger group of auxiliary verbs. Section 5.2.1 presents a restructuring analysis of these elements based on X^0 -raising. Restructuring verbs include the desiderative marker *fia*, the iterative marker *liu*, *liga* ‘likely,’ *kamata* ‘begin,’ and *teitei* ‘nearly.’ A few examples are provided in (191).

- (191) a. Nākai fia inu au he kalase pia nā he fiho.
 NEG DES drink 1SG GEN glass beer DEM CAUS froth
 ‘I don’t want to drink that beer because of the froth.’ (Sperlich 1997: 77)
- b. Ne kamata lologo e tau tagata.
 PST begin sing ABS PL person
 ‘The people began singing.’ (Seiter 1980: 13)

Overview of postverbal particles and adverbs

Niuean syntax is even more complicated in the postverbal realm of the verbal complex; specific examples are given (192).

(192) Postverbal particles and adverbs

Man	Dir	Appl	∀	RP	Asp Adv	Emph	Pfv	Interr
<i>fakamitaki</i> 'well'	<i>mai</i> 'to speaker'	<i>aki</i> 'with'	<i>oti</i> 'all'	<i>ai</i> 'there'	<i>tūmau</i> 'always'	<i>noa</i> 'just'	<i>tuai</i>	<i>nakai</i> neutral
<i>lahi</i> 'greatly'	<i>atu</i> 'to hearer'				<i>hololoa</i> 'often'	<i>foki</i> 'again'		<i>kia</i> non-neutral
	<i>age</i> 'away'				<i>agaia</i> 'still'	<i>lā (ia)</i> 'just, yet'		<i>ka</i> rhetorical
	<i>hake</i> 'up'				<i>agataha</i> 'now'	<i>koa</i> EMPH		
	<i>hifo</i> 'down'					<i>nī</i> 'just'		
	<i>kehe</i> 'away'							

The slot following the verb (or the incorporated argument in PNI structures) is filled by manner adverbs (descriptively speaking) and directional particles that modify the event expressed by the main verb (193a-b). In turn, manner adverbs and directional particles are followed by the applicative head (193c). Next comes the particle *oti* 'all' that can scope over subjects, direct objects, and instrumentals (193d).

- (193) a. *Oko mai e tau kai.*
collect DIR ABS PL food.
'Collect the food.' (Haia 2010: 111)
- b. *Fiafia lahi a lautolu ke he vahā mafana i Niu Silani.*
like MAN ERG 3PL GL LOC season warm in New Zealand
'They love summer in New Zealand.' (Haia 2010: 249)
- c. *Kua hele aki tuai e Sione e titipi haana e falaoa.*
PFV cut APPL PFV ERG Sione ABS knife POSS ABS bread
'Sione has cut the bread with his knife.' (Seiter 1980: 244)

- d. Ne onono oti e tau fānau ke he ika.
 PST look all ABS PL children GL LOC fish
 ‘All the children were looking at the fish.’ (Seiter 1980: 66)

The five remaining postverbal particles are related to higher clausal projections, i.e., AspP, TP, and CP. The first element to follow the secondary predicates discussed above is the locative/temporal resumptive pronoun *ai* (194a) (see Chapin 1974 for an extensive discussion of this particle in Polynesian languages). The locative/temporal particle is followed by the aspectual adverbs (194b-c), which are in turn followed by various emphatic particles, e.g., *nī* ‘just’ and *foki* ‘again’ (194c-d).

- (194) a. Ti totolo kehe fakaeneene ai a ia...
 then crawl DIR MAN LOC.PRT ABS 3SG
 ‘So he crawled carefully away...’ (Seiter 1980: 23)
- b. Fā kitekite tivī tumau a matutolu.
 HAB watch TV always ABS 2PL.EX
 ‘We always watch TV together.’ (Haia 2010: 126)
- c. Kua fā mafuti mai agaia nī e mamahi he haana a manava.
 PFV HAB feel DIR still EMPH ABS pain LOC POSS LK stomach
 ‘(She) can still feel the pain in her stomach.’ (Sperlich 1997: 91)
- d. Kua liu foki tuai a patu kō ke konahia.
 PFV return EMPH PFV ABS guy DEM SBJ drunk
 ‘That guy has once again gotten himself drunk.’ (Seiter 1980:14)

The next component of the verbal complex is the perfective marker *tuai* (194d and 195). According to Seiter (1980), the postverbal perfective marker *tuai* and the preverbal perfective marker *kua* mostly cooccur, as in (195a); however, both perfective markers can also surface independently (195b-c).

- (195) a. Kua tele oti tuai e lautolu a au.
 PFV kick all PFV ERG 3.PL ABS 1.SG
 ‘They’ve all kicked me.’ (Seiter 1980: 66)

- b. Kua ega.ega e tau kauvehe.
PFV red.REDUP ABS PL cheeks.

‘The cheeks are rosy.’ (Sperlich 1997: 55)

- c. Ne futi fakalalilali e ia e ika ati hola ai tuai.
PST catch lazily ERG 3SG ABS fish hence escape LOC.PRT PFV

‘He made no effort catching the fish, and so (it) escaped.’ (Sperlich 1997:174)

Question particles surface in the final position of the verbal complex, i.e., immediately before the subject. Niuean has three question particles: i) the neutral polar question particle *nakai*; ii) the non-neutral question particle *kia*; and iii) a rhetorical question particle *ka* (Massam 2003; Massam and Starks 2008; Setier 1980; Sperlich 1997).⁷ Each of these question particles can surface at the end of the verbal complex, as in (196), but *ka* and *kia* can also surface after negation and clause-finally, and *kia* can surface after clause-initial *wh*-elements in constituent questions.

- (196) a. Fia fano nakai a koe ke koukou tahi a pogi?
DES go Q ABS 2SG GL swim sea tomorrow

‘Do you want to go swimming tomorrow?’ (Haia 2010: 365)

- b. Ko e tau ika nī ka ia ha mua ne hī?
PRED PL fish EMPH Q DEM GEN 2.DU PST catch

‘Is that all you caught?’ (Massam and Starks 2008: 79)

- c. Konei agaia nī kia a mutolu?
here still EMPH Q ABS 2PL

‘Are you still staying here?’ (Sperlich 1997:163)

While Massam and Starks (2008) provide a thorough account of the syntactic and discourse properties of these particles, their prosodic properties are understudied. For

⁷Whether *kia* and *ka* are distinct forms is somewhat contentious. Seiter (1980) does not even recognize *ka* in his discussion of Niuean question particles. Massam and Starks (2008) speculate that this omission is due to confusion between the question particle *ka* and the contraction of the question particle *kia* with the absolute marker *a*, which is also realized as *ka*. Of course, this raises the question of whether the contracted form is composed of *kia* + *a* or *ka* + *a*. Another complication is that both *ka* and *kia* are optionally realized as *kā* phrase-finally (Massam and Starks 2008).

example, *kia* contracts with a following case marker (Seiter 1980; Sperlich 1997), and the phonological form of both *ka* and *kia* depends to some extent on their location in the clause (Massam and Starks 2008 and sources cited therein). Hence, the question particles behave like morphophonological clitics: they attach to different types of lexical categories; they appear in different positions in the clause; they are affected by their phonological environment. However, future work must determine if the clitic domain is syntactically or prosodically defined.

An analysis of the emphatic particles, the locative/temporal particle *ai*, and the interrogative markers is outside of the scope of the present discussion. These particles are presumably generated above the verb and are therefore not implicated in head movement, but a more specific statement about their base positions is not possible at this juncture. Furthermore, whether one or all of these types of particles surface in their postverbal position because the verb moves around them (like the perfective marker *tuai*, see Section 5.4.4), or whether they move to their surface position because they are clitics (syntactically or prosodically defined), is unclear. Massam (2010, 2013) suggests in passing that these elements enter the derivation above the main verb and participate in the roll-up movement that begins with VP.

The remainder of this chapter will focus on preverbal and postverbal secondary predicates, the aspectual/temporal adverbs, and the perfective marker *tuai*.

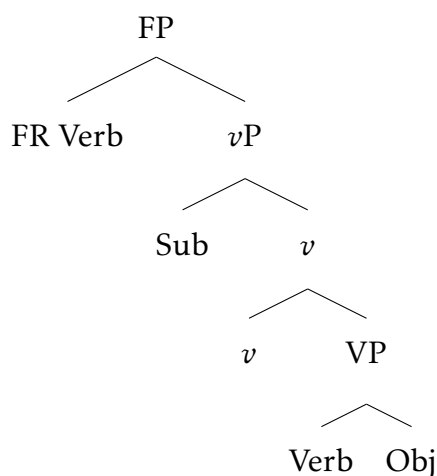
5.2 Restructuring predicates

Restructuring predicates embed infinitival complements of varying sizes (e.g., vP, VP, and CP) and typically include modal, aspectual, and motion verbs are generally among them (Wurmbrand 2005 and sources cited therein). In the literature on restructuring predicates, a three-way distinction is drawn between i) “lexical restructuring,” which involves two fully lexical verbs; ii) “functional restructuring,” which involves a restructur-

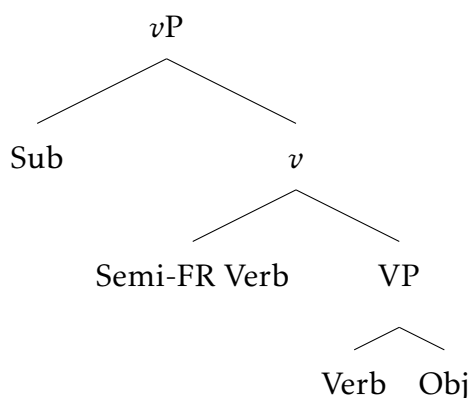
ing verb that does not establish a thematic relationship with any argument; and iii) “semi-functional restructuring,” which involves a restructuring verb that assigns the external argument’s theta role. Niuean exemplifies functional and semi-functional restructuring.

Following Wurmbrand (2001) and Takahashi (2012), I adopt (197a) as the structural representation of functional restructuring and (197b) as the structural representation of semi-functional restructuring. Note that the semi-functional restructuring (Semi-FR) verb is in a position where it can assign a theta role to the external argument, while the functional restructuring (FR) verb is not.

(197) a. Functional restructuring



b. Semi-functional restructuring



The remainder of this section takes a closer look at restructuring predicates in Niuean. For Massam (2013), restructuring verbs (preverbs in her analysis) take either a *vP* or a TP complement, depending on their argument-sharing properties, i.e. whether or not they

assign an external θ -role. Despite the fact that certain restructuring verbs select TP, TAM markers never intervene between restructuring verbs and main verbs. This is not an immediate problem for Massam, who contends that overt morphemes associated with tense and aspect, even in embedded contexts, are generated in the extended CP.

Here, I adopt the basic premise of Massam's (2013) analysis, but suggest that restructuring verbs take either a v P or VP complement. This analysis brings Niuean in-line with established analyses of functional and semi-functional restructuring verbs in Germanic and Japanese (Wurmbrand 2001, Takahashi 2012). Because Niuean is strictly V^0 -raising, on my analysis the lower verb and the restructuring verb form a complex head before moving to T^0 . This move allow us to account for the failure of TAM markers to intervene between restructuring and main verbs, while still locating the tense particles in their traditional location: T^0 .

5.2.1 Niuean data

Recall that one or more items from a closed class of predicates may precede the main verb of the clause in Niuean. Massam refers to these items as “preverbs” and Seiter (1980) and Sperlich (1997) refer to them as “auxiliaries.” The main verb determines case assignment and exhibits plural agreement (Seiter 1980, Massam 2013). The list in (198) presents the complete set of Niuean restructuring verbs, which happens to represent the typical members of this class of predicates cross-linguistically.

(198) Niuean restructuring predicates

- a. *fā* ‘habitual’
- b. *fia* ‘want’
- c. *kamata* ‘begin’
- d. *leo* ‘sound like’
- e. *liga* ‘likely’
- f. *liu* ‘return’
- g. *mata* ‘appear, look’
- h. *teitei* ‘nearly’

Restructuring verbs illustrate the challenges associated with identifying the lexical class of Niuean roots, like that of so many Polynesian languages (Biggs 1971; Broschart 1997; Massam 2005; Chung 2012; among others). Outside of the restructuring context, three of the items shown in (198) commonly function as nouns. The restructuring predicate/noun pairs are *mata* ‘face, eye,’ *leo* ‘sound, voice,’ and *fia*, which yields *fiafia* ‘entertainment.’ An example of a restructuring predicate/noun pair is given in (200):

- (199) a. Mata ita tuai a Sefa ke he taha mena.
 look angry PFV ABS Sefa GL LOC NSP thing
 ‘Sefa looks angry about something’ (Seiter 1980: 12)
- b. Kua mamahi haana a mata.
 PFV SORE POSS ABS eye
 ‘His eye is sore.’ (Sperlich 1997: 209)

The rest of the items in (198) occur as main verbs. Examples with *fā* ‘habitual’ and *liu* ‘return’ are given below.

- (200) a. Ne fā e taute he matua ke he tau mena kai ha laua.
 PST want ABS make GEN parent GL LOC PL thing eat GEN 3.DU
 ‘It was habitual that their father made their food.’ (Massam 2013: 61)

- b. To liu mai a ia anoiha.
 FUT return DIR ABS 3SG future
 ‘(S)he will return in the future.’ (Sperlich 1997: 50)

Whether or not an item from (198) is functioning as a restructuring verb or the main verb of a clause can be discerned by the location of pre- and postverbal particles. The margins of the Niuean predicate are clearly marked on the left by TAM markers and on the right by the applicative head, emphatic clitics, the postverbal perfective marker *tuai*, etc. Therefore, if two verbs are preceded by different preverbal particles, it stands to reason that the structure contains two verbal complexes. If, on the other hand, two verbs share a set of pre- and postverbal particles, then it stands to reason that they are members of a complex predicate.

For example, in (201a), *liu* ‘return’ and the embedded predicate *konahia* ‘drunk’ each have their own TAM markers, the disjoint perfective markers *kua...tuai* ‘PERF’ and the subjunctive marker *ke*, respectively. In contrast, *liu* ‘return’ and *kitia* ‘see’ behave as a unit in (201b), forming a complex predicate with a single set of pre- and postverbal particles.

- (201) a. Kua liu foki tuai a patu kō ke konahia.
 PFV return EMPH PFV ABS guy DEM SBJ drunk
 ‘That guy has once again gotten himself drunk.’ (Seiter 1980:14)
- b. Ne liu kitia foki he taha tama fifine a koe.
 PST return see also ERG NSP child female ABS 2SG
 ‘A little girl saw you again.’ (Seiter 1980:14)

Two of the other restructuring predicates belong to the class of raising predicates: *teitei* ‘nearly’ and *kamata* ‘begin,’ shown in boxes in (198) (Seiter 1980; see Longenbaugh 2014 for a copy-raising analysis). Like English ‘begin,’ *kamata* can also be used as a control predicate (202c). Examples with *kamata* ‘begin’ are given below:

- (202) a. Ne kamata ke uku hifo e tama ke he toka.
 PST begin DEP.T dive down ABS child GL LOC bottom
 ‘The child began to dive down to the bottom.’ (Seiter 1980:157)

- b. Ne kamata e tama ke uku ke hifo he toka.
 PST begin ABS child DEP.T dive down GL LOC bottom
 ‘The child began to dive down to the bottom.’ (Seiter 1980:157)
- c. Kua kamata e Sione e lesoni.
 PFV begin ERG Sione ABS lesson.
 ‘Sione began the lesson.’

Note also that *liga* ‘likely’ has the unique property of embedding a finite CP (203), as indicated by the presence of the matrix tense marker *to* and the interrogative particle *nakai* in the lower clause:

- (203) Liga [to moua nakai ha mena kai].
 Likely FUT get INTERR NSP thing eat
 ‘Is any food likely to be found?’ (Seiter 1980:13)

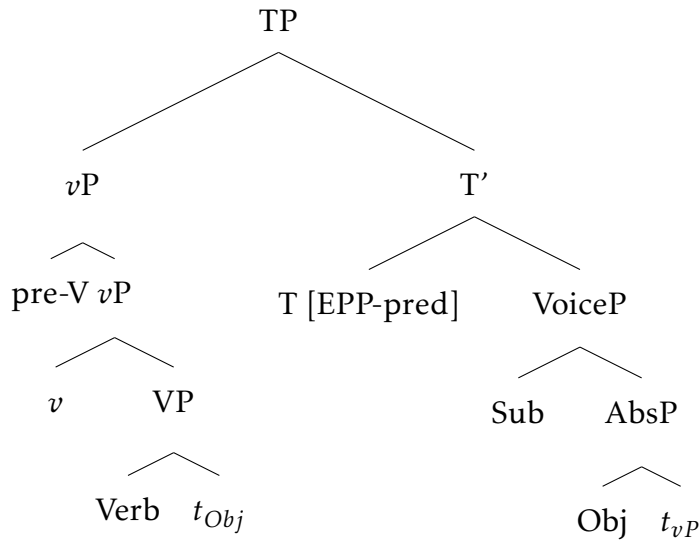
Thus, what emerges is a group of restructuring verbs whose individual members differ with respect to lexical characteristics unrelated to restructuring. This could be confusing were it not for the fact that Niuean has preverbal and postverbal particles that delimit the margins of the verbal complex.

Subsequent sections focus on a final property that distinguishes different types of restructuring verbs: whether or not they share an external argument with the main verb of the clause. Argument-sharing predicates include *fia* ‘want’ and *kamata* ‘begin,’ but not *liga* ‘likely,’ *liu* ‘again,’ and *teitei* ‘nearly’ (Massam 2013).

5.2.2 The X/XP-raising analysis of restructuring predicates

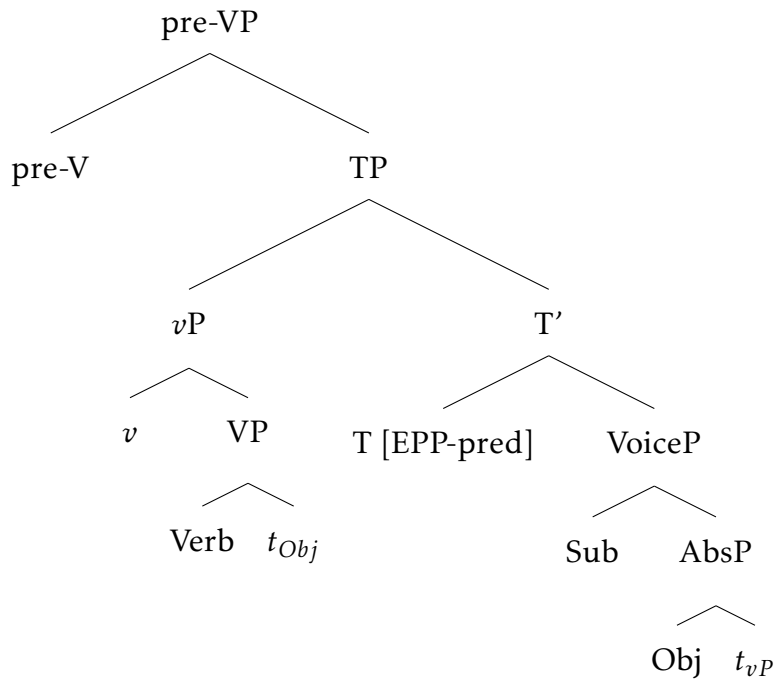
Massam (2013) generates argument-sharing preverbs (“semi-functional restructuring verbs” in our terminology) below the locus of the transitive subject—spec,Voice. In (204), the argument-sharing preverb is a v^0 that merges with vP .

- (204) Argument-sharing preverb (Massam 2013)



Massam (2013) generates non-argument-sharing preverbs (“functional restructuring verbs” in our terminology) in a position above the location of the transitive subject, where they merge with TP (205).

(205) Non-argument-sharing preverb (Massam 2013)



The fact that non-argument-sharing restructuring preverbs merge with TP, and not with the verbal projection vP (see Wurmbrand 2001, 2005, and sources cited therein) ties into Massam's assumptions about Niuean clause structure more generally. As first discussed in Sections 2.3 and 2.5, Massam (2000, 2001, et seq.) argues that T^0 hosts an EPP feature (EPP-pred) that triggers the raising of the VP into its specifier. This situation is illustrated in the trees above. Under this assumption, if the vP did not raise to the specifier of TP, the verb would not precede the subject. Thus, the fact that these clauses are VS and not SV means that non-argument-sharing preverbs must merge with a phrase that is at least as high as TP.

One might expect dependent tense markers to surface between the restructuring verb and the main verb if the complement of the restructuring verb were TP. However, nothing other than light verbs (v^0 s) can surface in that intermediary position. This does not pose an immediate problem for Massam, because for her, T^0 is always null. She contends that the overt particles corresponding to tense and aspect are generated in the extended CP projection, even in the context of embedded clauses (see Section 5.3).

5.2.3 The uniform X-raising analysis of restructuring predicates

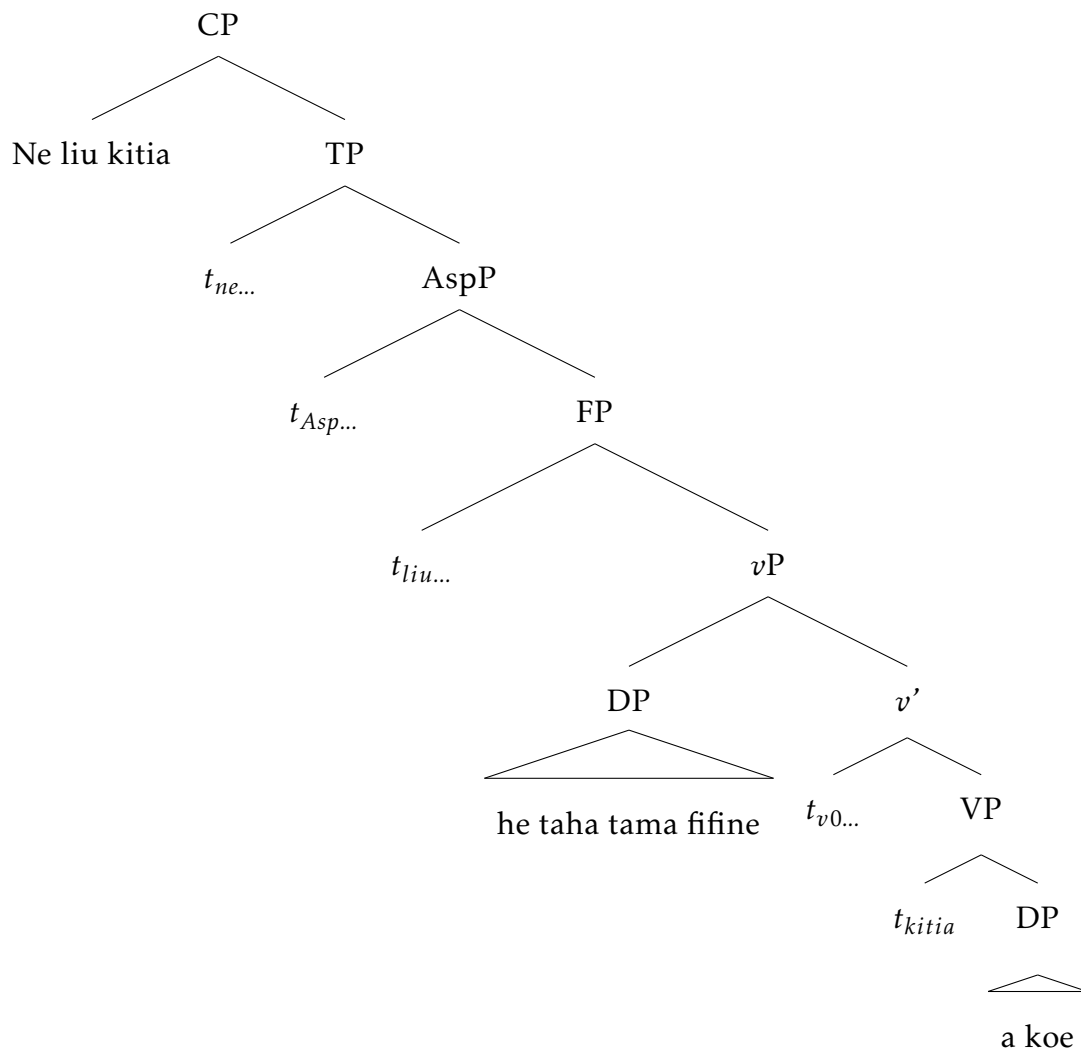
If a prosodic account of PNI is adopted, there is no reason to stipulate the existence of two related but distinct projections, i.e., TP, located above vP , and NP ($\approx TP$), located in the extended CP projection. In section 5.3, I will argue that Niuean clause structure only requires multiple projections to be associated with tense in the context of VP-raising.

In the context of the uniform X^0 -raising analysis, where tense and aspect markers are generated in TP and AspP as opposed to CP, the fact that dependent TAM markers do not intervene between restructuring verbs and main verbs suggests that restructuring verbs must select a category lower than AspP. At the same time, functional restructuring verbs do not assign theta roles, which suggests that theta roles are assigned before they enter the derivation. Thus, we can conclude that functional restructuring verbs are generated

above the position of the transitive subject.

The tree in (206) illustrates the derivation of a clause with the functional restructuring verb *liu* ‘return’. The fact that functional restructuring verbs like *liu* do not share an external argument with the main verb is represented by the fact that they merge with *v*P.

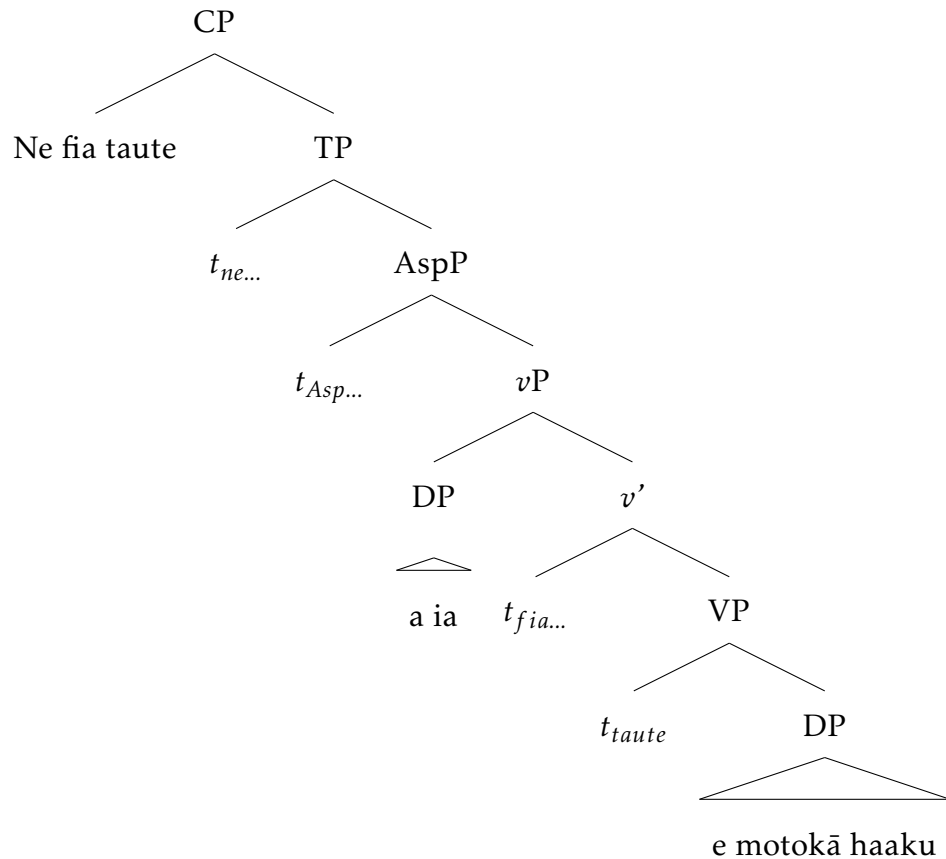
- (206) Ne liu kitia foki he taha tama fifine a koe.
 PST return see again ERG NSP child female ABS 2.SG
 ‘A little girl saw you again.’ (Seiter 1980:14)



In contrast, semi-functional restructuring verbs share their external argument with the main verb; thus, they must enter the derivation in a position where they will be able to assign a theta role. This suggests that semi-functional restructuring verbs select VP. The

tree in (207) illustrates the derivation of a clause with the semi-functional restructuring verb *fia* ‘want’.

- (207) Ne *fia* taute a ia e motokā haaku.
 PST want fix ERG 3SG ABS car POSS
 ‘He was willing to fix my car.’ (Seiter 1980:10)



Under this analysis, the complement of a restructuring verb is VP if the verb is θ -assigning and vP if it is not. By adopting the uniform X^0 -raising analysis instead of the X^0/XP -raising analysis, we are able to derive a cross-linguistically attested structure for functional restructuring verbs (see Wurmbrand 2001, Fukuda 2009, and Takahashi 2012 for German, Dutch and Japanese).

The above discussion of restructuring predicates has highlighted the first situation in which the X^0/XP -raising analysis requires phonologically vacuous structure (a perpetually null T^0) that the uniform X^0 -raising analysis can do without. Phonologically vacuous

structure is not a *prima facie* problem; in a language with no overt tense, it is reasonable to assume that T^0 is null. However, that T^0 should be perpetually null in a language with overt tense particles is highly unintuitive. Furthermore, the path to acquisition of null T^0 would be rather convoluted for a learner faced with data containing many overt tense markers.⁸ The next section discusses the location of TAM in more detail.

5.3 The location of TAM

Table (188), repeated as (208), below, introduced the matrix TAM markers:

(208) Matrix TAM markers

C^0	T^0	Asp^0	Gloss
		<i>kia</i>	exhortative
		<i>kua</i>	perfective
	<i>ne</i>		past
	\emptyset		present
	<i>to</i>		FUT
<i>hā</i>	<i>ne</i>	(<i>fā e</i>)	progressive
<i>hā</i>		<i>kua</i>	factive
<i>nakai</i>			interrogative
<i>kia</i>			interrogative
<i>kā</i>			interrogative

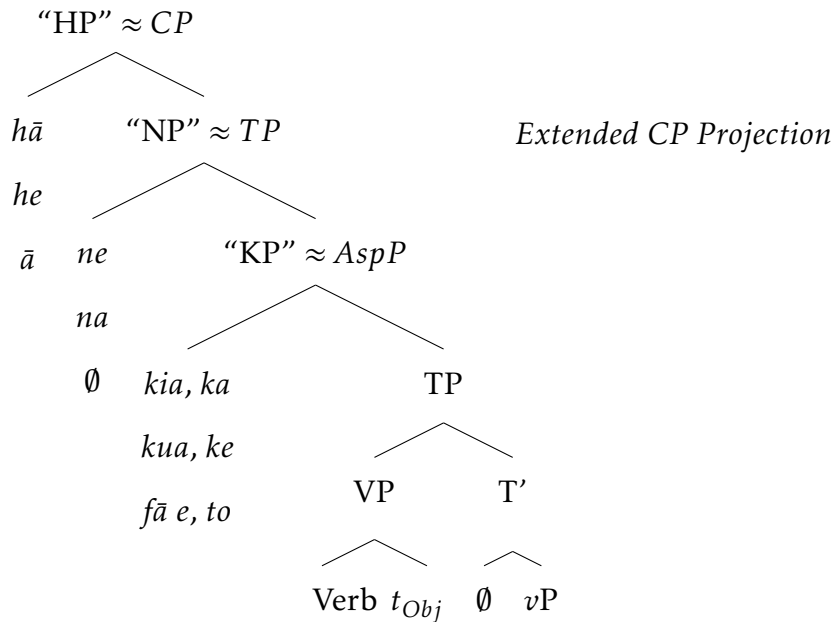
⁸Thanks to Omer Preminger for pointing out the acquisition puzzle to me.

The goal of this section is to demonstrate that the uniform X^0 -raising analysis simplifies the morphosyntactic analysis of TAM markers required by the X^0 /XP-raising analysis (Massam 2009b).

5.3.1 The X/XP-raising analysis of TAM

The tree in (209) illustrates the location of TAM markers in the X^0 /XP-raising analysis.

(209) Location of TAM according to X^0 /XP-raising



As (209) shows, the X^0 /XP-raising analysis posits that overt TAM markers are generated in an extended CP projection, which, curiously enough, replicates the canonical functional field exactly (e.g., HP > NP > KP the notional equivalent of standard CP > TP > AspP). Below this extended CP projection, we find TP located in its standard position. TP's presence here is indispensable to the X^0 /XP-raising analysis, since it hosts both the fronted predicate itself and the EPP-pred feature that motivates the predicate to front in the first place. However, despite the existence of both overt tense markers and TP, it is impossible to generate TAM markers in T^0 on this analysis.

In a simple TAM-VSO clause, an overt T^0 could theoretically raise directly to C^0 , bypassing the verb in spec,T. In order to illustrate why T^0 cannot be overt in the X^0/XP -raising analysis, consider the following example, which illustrates a clause that contains a functional restructuring verb as well as overt tense and aspect markers (210).

- (210) Hā ne fā e liu koukou e tagata i kō.
 PROG PROG return swim ABS man LOC DEM
 ‘That man there was swimming again.’

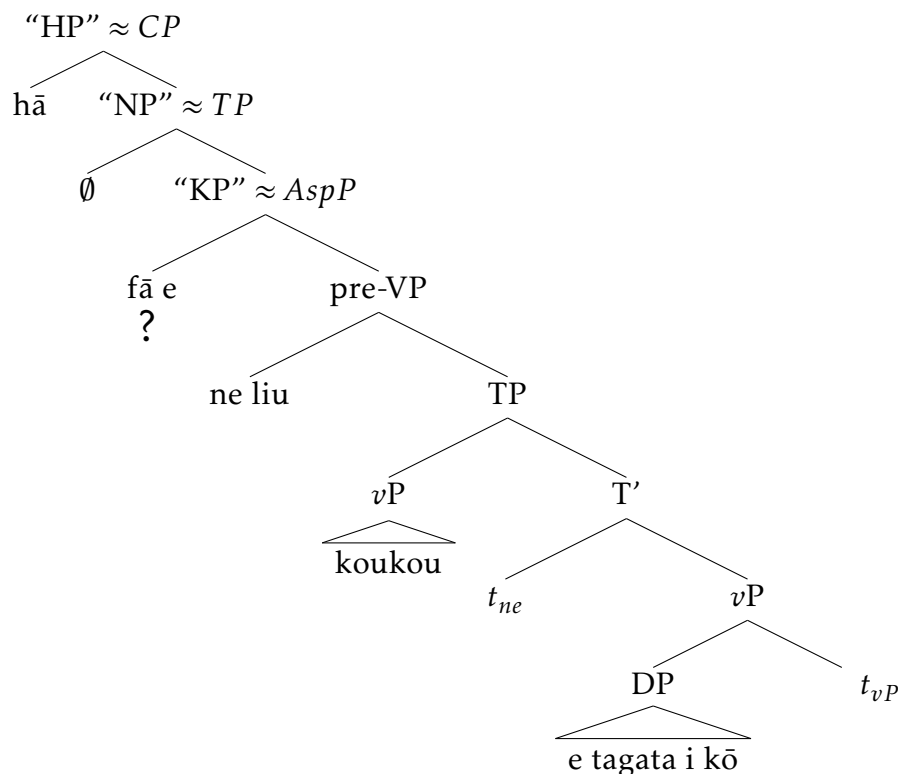
According to the X^0/XP -raising analysis, functional restructuring verbs like *liu* merge with T^0 . The feature that triggers the movement that results in the verb-initial surface structure is located on T^0 ; and the complement of *liu* in (210) is VS and not SV (see Section 5.2.1 for a discussion of restructuring predicates).

Consider, for argument’s sake, that overt T^0 began in the complement of the restructuring verb, but surfaced in C^0 . In this case, the restructuring predicate *liu* would be an intermediary landing-site. In accordance with the locality condition on head movement (Travis 1984, Matushansky 2006), which states that head movement cannot pass over an intervening head, T^0 would have to pick up the restructuring predicate on its way to C^0 . In this case, it should be possible to generate (211a) and (211b), but not the attested (211c):

- (211) a. Predicted, but unattested: *hā fā e ne liu (* C^0 - Asp^0 - T^0 -*liu*)
 b. Predicted, but unattested: *hā fā e liu ne (* C^0 - Asp^0 -*liu*- T^0)
 c. Unpredicted, but attested: hā ne fā e liu (C^0 - T^0 - Asp^0 -*liu*)

The problem is illustrated by the hypotheticalal tree in (212), which demonstrates that the aspectual particle *fā e*, located in K^0 ($\approx Asp^0$), cannot surface in its attested position between the tense marker *ne* and the preverb *liu* if the tense marker is located in T^0 .

(212) X^0/XP -raising with tense in T^0



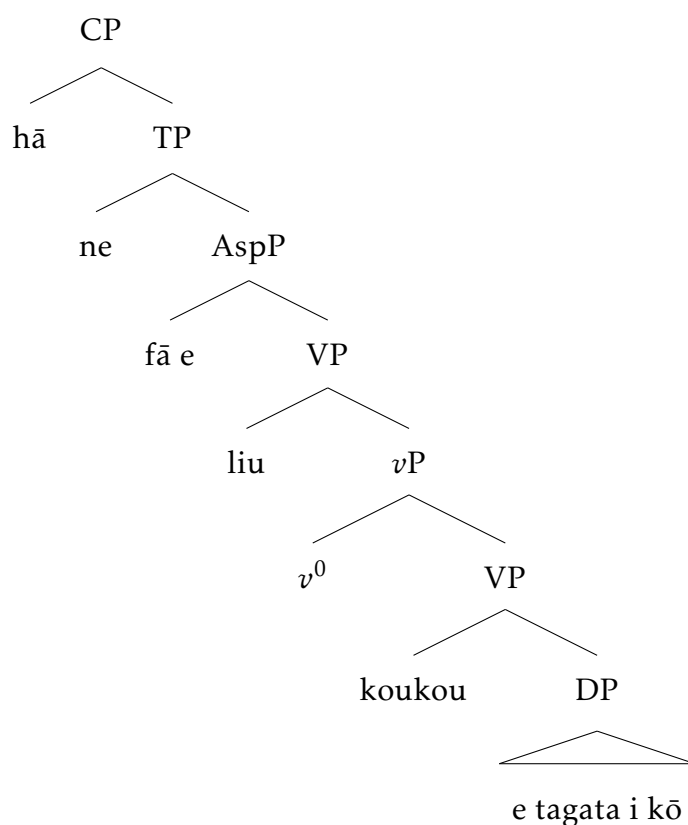
In order to achieve the correct order, the aspect and tense markers must be generated in immediately adjacent phrases. In the context of the X^0/XP -raising analysis, generating them in the extended CP projection involves the fewest extra stipulations.

Generating $KP (\approx AspP)$ below TP is not a possible solution, because the specifier of KP would again be a landing site for the predicate as it rolled up the clause. Such a configuration would result in *all* aspectual markers being pronounced in predicate-final position, because $K^0 (\approx Asp^0)$ would be located in a moved constituent, and as such, would be unavailable for the sort of head movement that is required to produce the attested word order. The X^0/XP -raising analysis must commit to the principle that head movement out of a moved constituent is illicit, because otherwise verbal heads contained within the specifier of TP could move to $K^0 (\approx Asp^0)$ and beyond—but the word orders resulting from such movement are not attested in Niuean.

5.3.2 The uniform X⁰-raising analysis of TAM

The uniform X⁰-raising analysis maintains non-exceptional functional structure CP > TP > AspP > vP. Whereas functional restructuring verbs must merge with TP in the X⁰/XP-raising analysis, they can merge directly with vP in the X⁰-raising analysis (see Section 5.2.1). As such, TP and AspP are generated in immediately adjacent phrases, which is a precondition for arriving at the attested word order, as shown above.

(213) X⁰-raising with tense in T⁰



As (213) shows, the uniform X⁰-raising analysis is compatible with more standard assumptions about the projection of the clausal spine and the correspondence between the semantic value of TAM markers and their syntactic position. In short, this improvement is made possible because the natural consequence of adopting X⁰-raising is to extend the positions available to the fronting verb to any head in the clausal spine. In contrast, restricting the location of verbs that surface before the subject in affirmative clauses to the

specifier of TP results in unnecessary complications for other aspects of Niuean syntax; for example, the position of TAM markers is just one example.

Especially in light of the structure in (213), one might wonder why any movement is assumed at all. Section 5.4 introduces a few reasons to believe that the Niuean verb surfaces quite high in the clause.

5.4 Postverbal particles and inverse order

The components of the verbal complex that follow the verb but precede the arguments have been described as taking inverse scope (Rackowski and Travis 2000; Massam 2010). For present purposes, the term “inverse scope” indicates a linear order (left-to-right) that corresponds to a bottom-up hierarchical order (as opposed to top-down). A selection of postverbal particles are given below to reflect Niuean’s inverse relationship between linear and hierarchical order:⁹

(214) Inverse scope of postverbal particles

- a. Surface order: MAN/DIR—ASP Adv—PERF—Q
- b. Scope order: Q > PFV > ASP Adv > MAN/DIR

Massam (2013) addresses the issue of inverse scope by merging the particles in the correct scope order and deriving their inverse surface order through a series of successive roll-up movements of XPs (see also Rackowski and Travis 2000, Pearson 2000, 2001, Cinque 2005, and Massam 2010, and sources cited therein).

Section 5.4.1 discusses more drawbacks of the X^0 /XP-raising analysis, including i) the stipulation of a series of null v^0 s in order to avoid anti-locality effects and ii) the evacua-

⁹Manner and directional predicates (also called adverbs in the literature) can surface in either order. In general, manner predicates precede directional predicates. However, Seiter (1980) reports that the opposite order may be more common when the manner predicate is composed of the causative marker *faka* and a reduplicated root, which suggests that their relative order is determined by phonological factors, e.g., weight.

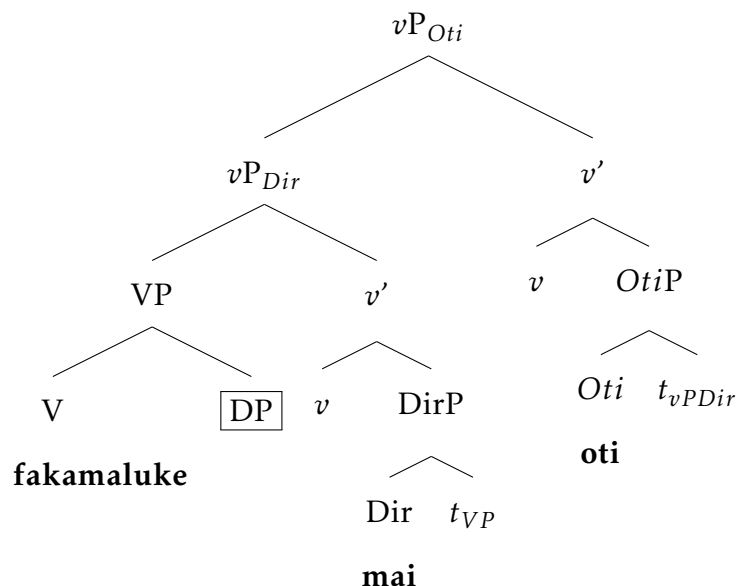
tion of DP objects out of what should be an island. Sections 5.4.2 and 5.4.4 demonstrate how an X^0 -raising analysis can account for the inverse scope of postverbal particles.

5.4.1 XP roll-up movement

The tree in (216) illustrates a portion of the structure Massam proposes for a complex predicate consisting of a main verb and two postverbal particles: a directional particle and *oti* ‘all.’ In the interest of clarity, (216) represents a portion (shown in bold) of the attested example (215).

- (215) Kua **fakamaluke** **mai** **oti** e ia haana a tau mena tui ki fafo.
 PFV throw DIR all ERG 3.SG POSS ABS PL thing cloth GL outside
 ‘He threw his clothes outside.’ (Sperlich 1977: 190)

- (216) Roll-up movement account of postverbal particles



This analysis requires that a fair amount of null structure be stipulated for purely theoretical reasons. The postverbal manner and directional heads are selected by null

v^0 s. The null v^0 s project specifier positions in which the lower XPs can land, thereby allowing them to avoid anti-locality effects, i.e., the distance between the complement of X^0 and spec,X is too short to support raising (Grohman 2003; Abels 2003). Facilitation of a movement operation that is needed for theory-internal reasons is a weak reason to postulate null structure. More importantly, Niuean has overt v^0 s, for example, the light verbs discussed in Section 5.2.1, which do not select manner and directional heads. It is unclear how a structure like the one above could prevent a particular particle from combining with an overt v^0 .

A second problem faced by the roll-up analysis concerns object evacuation. The object, shown in a box in (216), is deeply embedded in a moved constituent under this analysis. In order to derive canonical VSO word order, that object DP must evacuate the VP. If complex predicates are derived by XP-roll-up movement, subsequent movement of the object out of the complex predicate should violate the Freezing Principle, which holds that moved constituents are islands to extraction (Culicover and Wexler 1977; Wexler and Culicover 1980). The problem of object evacuation can also be articulated in terms of movement out of a complex specifier (Massam 2010).

The remainder of this section discusses three potential solutions to the problem of object evacuation (217):

(217) Solutions to the problem of object evacuation

- a. Cyclic argument evacuation
- b. ‘High Merge’
- c. V^0 -raising

The first solution is for the object to move to the edge of each iterated vP before that entire vP fronts to the specifier of the next highest vP . This type of solution is discussed at length in Koopman and Szabolcsi (2000) and Thiersch (2006). However, it is unclear how this approach can be applied to Niuean without assuming look-ahead (where the syntax is

allowed to make reference to a feature before it has entered the derivation), which is itself problematic in a bottom-up derivational system. Massam (2001) proposes that absolutive case must be assigned locally, which is why DP objects surface VP-externally. The case-assigning head Abs^0 (Massam 2009a) merges with an iterated vP (already replete with postverbal particles). If the object were to move to the edge of each vP iteration, it would need to begin moving before the case-assigning head even entered the derivation.¹⁰

Massam (2010, 2013) ultimately prefers to generate all verbal arguments outside of the VP; she refers to this solution as “High Merge.” To argue that a language does not have a VP constituent comprised of a verb and an object is to argue for non-configurationality. Although Massam (2010) does not set out to provide an analysis of Niuean argument structure, there are a number of reasons to be skeptical of the applicability of a non-configurational approach. Among them are i) a typical array of subject and object asymmetries, including a lack of subject incorporation; ii) argument/adjunct asymmetries with respect to the formation of relative clauses, raising constructions, and their scope relative to the postverbal particle *oti* ‘all’ (Seiter 1979, 1980; Massam 2002, 2013); and iii) isolating morphology and relatively strict word order, which contradicts the typical non-configurational properties of (at least) subject and object agreement and relatively free word order (Baker 1996; Jelinek 1984).

Individually, none of these incompatibilities necessarily rules out a non-configurational analysis. In fact, most of the factors listed above have been reconciled with a non-configurational account of some language. For example, Alderete (1998) and Aranovich (2013) argue for a partial application of the Pronominal Argument Hypothesis (Jelinek 1984, Baker 1996), i.e. that common nouns are modificational in nature, but pronouns

¹⁰Massam (2010) rejects cyclic evacuation on the basis of motivation. For her, only the last step of the cyclic movement operation would be well-motivated (i.e., the leg of the journey where the DP lands in AbsP). However, the same could be said for vP -roll-up movement in the X^0/XP -raising analysis: only the last step, where the predicate enters into a local relationship with T^0 , is motivated by the EPP-pred feature. Of course, whether one accepts a strong EPP-pred feature itself as motivation is a separate issue discussed in Section 2.5.

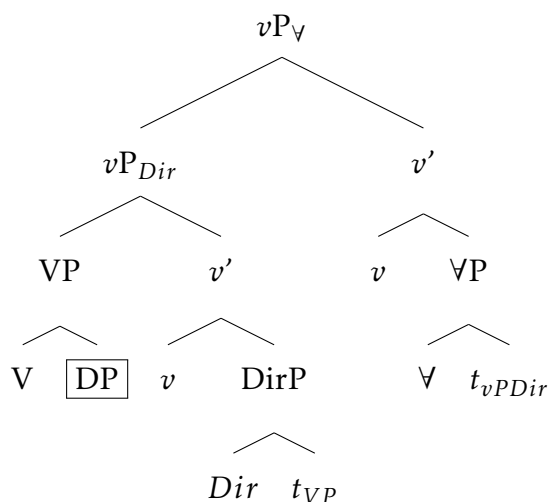
and proper nouns are true verbal arguments, for Fijian, an isolating language with relatively strict word order. Carnie (2005) also argues for a flat structure approach to Irish, where he derives Irish's well-documented subject/object asymmetries in the context of Lexical/Functional Grammar (for a more detailed discussion of Alderete (1998), Aranovich (2013), and Carnie (2005) see Section 2.6). However, the sheer number of standard configurational properties exhibited by Niuean make the postulation of non-configurationality difficult to maintain. Despite the fact that Niuean has more configurational properties than non-configurational properties, Massam (2010) concludes that High Merge is the most promising approach to the problem of object evacuation.

Massam's (2001) account of Niuean PNI already breaks with the UNIFORMITY OF THETA-ASSIGNMENT HYPOTHESIS (UTAH) (Baker 1988, defined in (150)), by positing that the incorporated argument in PNI constructions always merges directly with V^0 . Consequently, absolutive objects cannot be sister to V^0 in PNI-inst constructions. The prosodic account of PNI presented in Chapter 4 makes it possible to assume that Niuean argument structure conforms to UTAH. This account also makes it possible to pursue a V^0 -raising solution to the problem of object evacuation, which is the topic of the next section. Object evacuation is not a problem for the V^0 -raising account, because V^0 -raising generates Niuean's canonical VSO word order directly.

5.4.2 X-raising and postverbal secondary predicates

As discussed in Section 5.4.1, Massam (2013) proposes a roll-up account for a number of postverbal secondary predicates. In (218), directional particles and the postverbal particle *oti* 'all' (shown as V^0) illustrate the process. In effect, these postverbal secondary predicates are sandwiched between v Ps: both predicates select a v P and are selected by a v^0 . Each v P undergoes roll-up movement to the next highest spec, v , thus causing them to surface in the opposite order from which they were generated.

(218) Roll-up movement account of postverbal particles



Recall from the list in (217) that Massam (2010) considers an X^0 -raising analysis among the possible solutions to the problem of object evacuation. Aside from her position that it is impossible to reconcile an X^0 -raising analysis with the PNI construction, her primary objection to an X^0 -raising analysis is that it misses an opportunity to connect inverse scope and roll-up XP-movement (Pearson 2000, Koopman and Szabolcsi 2000, Cinque 2005, and Johns 2007). This position is dubious for two reasons. First, cross-linguistically, inverse scope cannot be attributed *exclusively* to roll-up movement.

Postverbal event modification in English can be described as taking inverse scope, as first noted by Andrews (1983).

(219) Postverbal English scope

- a. John knocked on the door twice intentionally.

intentionally > *twice*

- b. John knocked on the door intentionally twice.

twice > *intentionally*

The proposition in (219a) is only true if John always intended to knock twice. In contrast, (219b) is true whether John intended to knock twice or just once. For example,

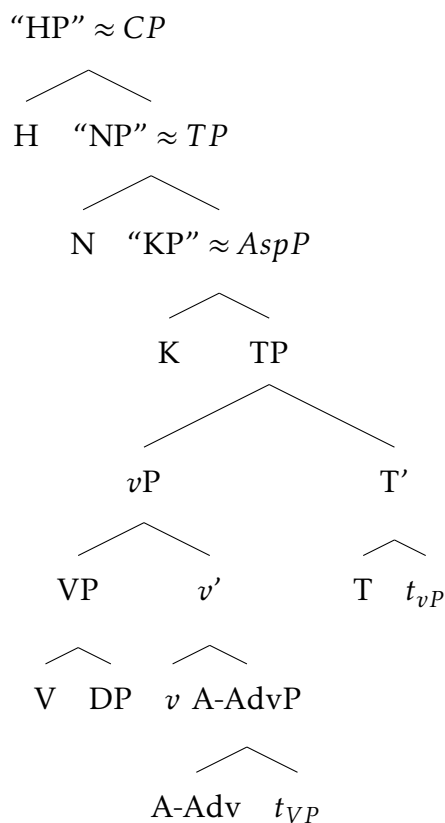
he could intend to knock once and do so, forget that he had done so, and then proceed to intentionally knock a second time. If inverse scope were always the result of roll-up movement, then (219) would necessarily be derived by roll-up movement; and this would have surprising consequences for English syntax.¹¹ A more compelling reason to be skeptical of a strict association between inverse scope and roll-up movement comes from a Niuean-internal data.

The X⁰/XP-raising analysis of Niuean has an easier time accounting for the inverse scope of postverbal secondary predicates than for the postverbal perfective marker *tuai* and the aspectual/temporal adverbs. When it comes to *tuai* and the aspectual/temporal adverbs, proponents of the XP-raising strategy are faced with a difficult choice: either i) abandon a strict correlation between roll-up movement and inverse scope, and thereby abandon one of the primary motivations for the analysis; or ii) adopt a roll-up analysis of aspectual/temporal adverbs and the postverbal perfective marker *tuai*, which, as I outline below, proves problematic.

Recall that spec,T is argued to be the final landing spot for the rolled-up predicate in affirmative clauses. This means that, in order to generate inverse scope via roll-up movement, *tuai* and the aspectual/temporal adverbs must be the heads of phrases generated below TP and all of the projections associated with TAM. Furthermore, they must be selected by null functional heads that project specifiers accessible to roll-up movement. This is illustrated with an aspectual/temporal adverb (A-Adv) in the tree below (238):

¹¹Others contend that the difference of interpretation between (219a) and (219b) is not a matter of scope, e.g., Larson (2005). Depending on whether a person is persuaded by Andrews (1983) or Larson (2005), the analogy between postverbal scope in Niuean and English may be more or less compelling.

(220) Postverbal perfective and aspectual/temporal adverb roll-up



Section 5.4.4 discusses an alternative way of achieving inverse scope for the postverbal perfective marker and aspectual/temporal adverbs. Before proposing an analysis that captures the inverse scope of postverbal secondary predicates based on X^0 -raising, the rest of this section gives two additional reasons to prefer uniform X^0 -raising over X^0 /XP-raising. The first reason is theoretical and the second empirical.

The theoretical reason is that the X^0 -raising analysis solves the problem of object evacuation, while complying with the idea that the thematic interpretation of an argument is tied to its original merge location (see also Chapters 3 and 4). The X^0 /XP-raising analysis needs to evacuate the object in order to derive VSO order, but the X^0 -raising analysis derives VSO directly. Furthermore, since Niuean does not display the Subject Only Restriction (see discussion and references in Section 2.3.1), the X^0 -raising analysis allows objects to be as accessible as subjects when it comes to A' -movement.

The second reason is empirical: only in the context of the X^0 -raising analysis is it possible to account for differences among postverbal secondary predicates with regard to their relationship with verbal arguments. For example, I will show that the V^0 -raising account is better equipped than the XP-raising account to address the fact that i) the applicative *aki* licenses instrumental objects; ii) the particle *oti* ‘all’ can scope over any of the core arguments of the verb, i.e., subjects, direct objects and instrumental objects; and iii) manner and directional heads do not interact with individual arguments at all, but instead form a compound with the main verb.

As compared to the uniform X^0 -raising analysis, the X^0 /XP-raising analysis has fewer possibilities for correlating the merge position of secondary predicates with their relationship to nominal arguments. In the X^0 /XP-raising analysis, postverbal particles can either form a complex head with the main verb or be generated above the VP in an order which reflects their scope, but not their sensitivity to different argument positions. The next section sketches an analysis of *oti*, *aki*, and predicates formed with manner and directional heads that captures their sensitivity to different argument positions.

5.4.3 Inverse order and X-raising: verbal projections

This section demonstrates how an X^0 -raising analysis captures the inverse order of three postverbal components of Niuean’s verbal complex (shown in (243)): i) manner and directional predicates (referred to as ‘adverbs’ elsewhere in the literature), ii) the applicative head *aki*, and iii) the particle *oti* ‘all.’

(221) Inverse scope of postverbal particles

- a. Surface order: $MAN/DIR-APPL-V$
- b. Scope order: $V > APPL > MAN/DIR$

Manner and directional predicates

Manner and directional “predicates,” under my analysis, surface between the main verb and the applicative head *aki*. Directional predicates orient the action of the verb with respect to the position of the interlocutors. Manner predicates describe the manner in which an event takes place. Both manner and directional predicates can either modify the main verb or serve independently as the main predicate. The chart in (222) provides definitions of the directional predicates when they modify a main verb and when they surface alone. Actual examples of the directional *mai* are given in (223).

(222) Postverbal particles

	Modificational Pred	Independent Pred
<i>mai</i>	towards speaker	‘give’
<i>atu</i>	towards hearer	‘give’
<i>age</i>	away from speaker and hearer	‘give’
<i>hake</i>	upwards	‘go up’
<i>hifo</i>	downwards	‘go down’

- (223) a. Ta mai e mena nā.
give DIR ABS thing DEM
‘Give me that thing.’ (Seiter 1980:21)
- b. Mai lā taha vala vai tote!
give EMPH NSP piece water little
‘Give me some water!’ (Seiter 1980:21)

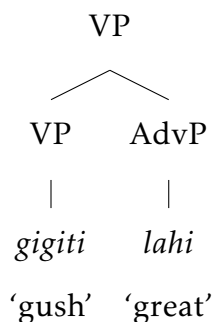
Examples of manner predicates serving as modificational elements and the primary predicate of the clause are given in (224a and c) and (224b and d), respectively. As illustrated by (224c-d), manner predicates are sometimes formed by a causative marker *faka* and a plain or reduplicated adjective (Seiter 1980, Gould et al. 2009).

- (224) a. Ne gigiti lahi mai e toto he ulu haana ne maihi.
 PST gush greatly DIR ABS blood LOC head POSS REL.PRS cut
 ‘The blood gushed from the cut on his head.’ (Sperlich 1997:100)
- b. Ne lahi e fale haana.
 PST big ABS hous POSS
 ‘His house was big.’ (Seiter 1980:17)
- c. Ne oho atu faka.vave.vave a Pimu ki mua.
 PST rush ATU CAUS.quick.REDUP ABS Pimu to front
 ‘Pimu started forward suddenly.’ (Seiter 1980:20)
- d. Kua faka.vave.vave a ia ka e oti e gahua.
 PFV CAUS.quick.REDUP ABS 3.SG REL.FUT ABS all ABS work
 ‘He hurried to finish the work.’ (Sperlich 1997:352)

Seiter (1980) reports that directional predicates tend to follow manner predicates, as in (224a) where *lahi* ‘great’ precedes the directional particle *mai*, but that the opposite order is also attested. For example, manner predicates formed with the causative marker *faka* tend to follow directional predicates. The word order variation suggests that directional and manner predicates have similar structural properties.

The fact that these items are often referred to as “adverbs” may be misleading, because it suggests an adjunction analysis along the lines of (225).

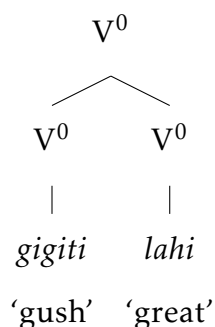
- (225) Adjunction analysis of *gigiti lahi* ‘gush greatly’



If the English translations are any indication, manner and directional predicates modify the main verb. However, given that i) some manner ‘adverbs’ and causative verbs have

similar structures;¹² ii) these so-called adverbs can function as the sole predicate of the clause; and iii) lexical categories are difficult to distinguish in Polynesian languages, it is also possible that manner ‘adverbs’ and directional particles are sub-constituents of a complex verb, as in (226):

(226) Complex verb analysis of *gigiti lahi* ‘gush greatly’

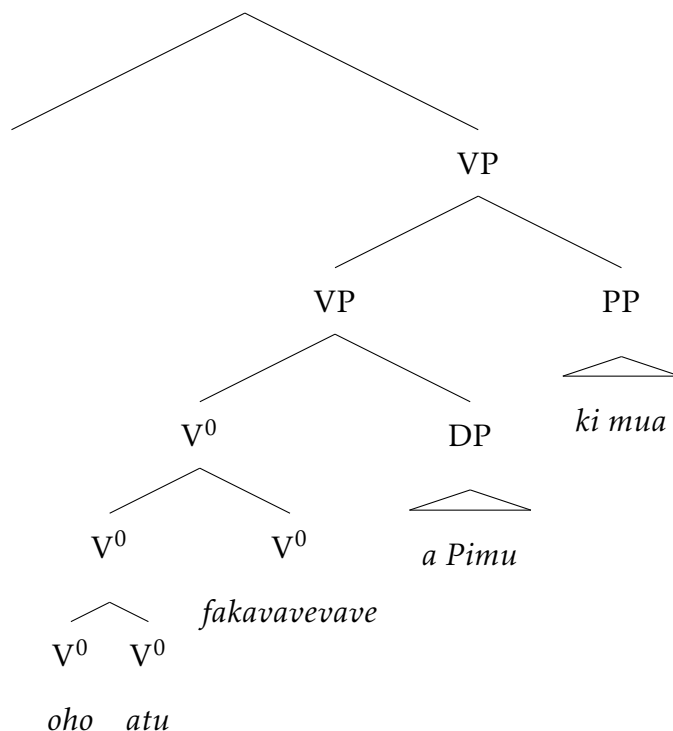


A complex verb analysis is consistent with the fact that Niuean compounds are head-initial and the fact that manner and directional predicates follow the verb. This type of analysis is also consistent with the fact that both manner and directional predicates modify the main verb, but do not interact with verbal arguments. Finally, a complex verb analysis explains why manner and directional predicates surface between the main verb and the applicative head *aki*, which selects VP (see the next subsection): namely, the manner and directional predicates are sub-constituents of a complex verb.

The structure in (227) represents the basic internal structure of complex verbs formed with manner and directional predicates in the spirit of Baker’s (1996) theory of morphosyntactic incorporation.

¹²See Gould et al. (2009) for a discussion of the difference and potential lack of difference between verbs and ‘adverbs’ formed with *faka*.

- (227) Ne oho atu fakavavevave a Pimu ki mua.
 PST rush DIR suddenly ABS Pimu to front
 ‘Pimu started forward suddenly.’ (Seiter 1980:20)



In sum, this subsection has proposed that manner and directional predicates are both subconstituents of a complex verb that is formed syntactically.

Aki applicative

The applicative head *aki* surfaces within the verbal complex, as shown in (236). In (236), the instrument *e pelu* ‘ABS bush knife’ (shown in bold) precedes the direct object *e fua loku* ‘ABS fruit pawpaw.’ In other words, the instrument is in a position ordinarily reserved for the direct object of a transitive clause, i.e., immediately following the subject.¹³

- (228) Fakaugauga aki e ia **e pelu** e fua loku.
 cut APPL ERG 3.SG ABS bush knife ABS fruit pawpaw.
 ‘He cut the pawpaw with his bush knife.’ (Sperlich 1997:66)

¹³Massam (2014) reports that while V-*aki*-S-Inst-DO is more widely accepted, V-*aki*-S-DO-Inst is possible. In keeping with the analysis presented below, V-*aki*-S-DO-Inst is presumably derived via scrambling.

This section is primarily concerned with examples like the one shown in (236). However, *aki* may also surface outside of the verbal complex, in which case it is a preposition:

- (229) Fano ke fahifahi e tau mohuku aki e **pelu**.
 go DEP.T clear ABS PL fern with ABS bush knife
 ‘Go and clear the ferns with the bush knife.’ (Sperlich 1997:60)

The instrument *aki e pelu* ‘with the bush knife’ looks like other PPs in Niuean. For example, it is found in clause-final position: the instrument follows the direct object in (229), but precedes the direct object in (236). Also note that objects of prepositions commonly bear absolutive case in Niuean, as illustrated by the comitative preposition *mo* and the benefactive/recipient preposition *ma*:

- (230) a. Hifo a Lemani ki tahi mo e vaka.
 go.down ABS Lemani GL sea COMTV ABS canoe
 ‘Lemani went down to the sea with the canoe.’ (Seiter 1980:37)
- b. Ne age e Sefa e fua moli ma e tama.
 PST give ERG Sefa ABS fruit orange BEN ABS child
 ‘Sefa gave the orange to the child.’ (Seiter 1980:36)

Objects of *aki* pattern in the same way as direct objects with respect to i) raising; ii) the resolution of long-distance dependencies; and iii) the possibility of scoping under *oti* ‘all.’ These properties are discussed extensively in Seiter (1979, 1980, 1983), Massam (1998), and Ball (2010) (see also Section 4.3 and Longenbaugh 2014); here, I will quickly review the relevant examples.

Like direct objects, instrumental objects in applicative constructions participate in ‘raising’ constructions where they are interpreted as the argument of an embedded predicate although they surface in the matrix clause (231). In contrast, oblique nominal arguments cannot undergo raising (232).

- (231) a. To maeke [e tama ē]_i ke lagomatai he ekekafo e_i.
 FUT possible ABS child DEM DEP.T help ERG doctor
 ‘This doctor could help this child.’ (Seiter 1980:247)

- b. Kua kamata [e toki]_i ke hio [aki] e Sefa e akau motua *e_i*.
 PFV begin ABS axe DEP.T cut APPL ERG Sefa ABS tree old
 ‘Sefa began to chop down the old tree with the axe.’ (Seiter 1980:250)
- (232) a. Kua maeke ke matematekelea a Maka he tagata ia.
 PFV possible DEP.T be.in.trouble ABS Maka OBL man DEM
 ‘Maka might be in trouble on account of that man.’ (Seiter 1980:248)
- b. *Kua maeke [he tagata ia]_i ke matematekelea a Maka *e_i*.
 PFV possible OBL man DEM DEP.T be.in.trouble ABS Maka
 Intended: ‘Maka might be in trouble on account of that man.’ (Seiter 1980:248)

In Niuean, long-distance dependencies, as found in relative clauses, topicalization, and *wh*-questions, are resolved with either a gap or a resumptive pronoun depending on the status of the argument. Instrumental objects in applicative constructions pattern with direct objects for the reason that they must relativize with a gap (233a-b). In contrast, oblique arguments relativize with a resumptive pronoun (233c).

- (233) a. ...mo [e tagata]_i ne moto e koe *e_i* (*a ia).
 COMTV ABS person PST punch ERG 2.SG ABS 3.SG
 ‘...with the person who you punched.’ (Seiter 1980:246)
- b. ...[e tagata]_i ne hukui [aki] e lautolu *e_i* (*a ia) a au he gahuaaga.
 ABS man PST replace APPL ERG 3.PL ABS 3.SG ABS 1.SG LOC work
 ‘...the man who they replaced me with at work.’ (Seiter 1980:250)
- c. ...[e tama fine]_i ne taute e au e pasikala afi [ma-ana]_i.
 ABS child female PST fix ERG 1.SG ABS bicycle fire BEN-3.SG
 ‘...the girl I fixed the motorbike for.’ (Seiter 1980:246)

The *oti* ‘all’ can scope over the instrumental argument in applicative constructions (234b), just as it can scope over direct objects (234a). In contrast, *oti* cannot scope over oblique arguments from a position internal to the verbal complex. The only way for *oti* to scope over an oblique argument is to surface next to it (235).

- (234) a. Moua oti he tama e tau kato.
 find all ERG child ABS PL basket
 ‘The child found all the baskets.’

- b. To tā oti e ia e fale aki e tau mena gahua nā.
 FUT build all ERG 3.SG ABS building with ABS PL thing work DEM
 ‘He’s going to build the house with all those tools.’ (Seiter 1980:251)

- (235) a. Ne tutala a au ke he tau momotua oti.
 PST talk ABS 1.SG GL LOC PL elder all
 ‘I talked to all the elders.’

- b. *Ne tutala oti a au ke he tau momotua.
 PST talk all ABS 1.SG GL LOC PL elder
 Intended: ‘I talked to all the elders.’ (Seiter 1980:249)

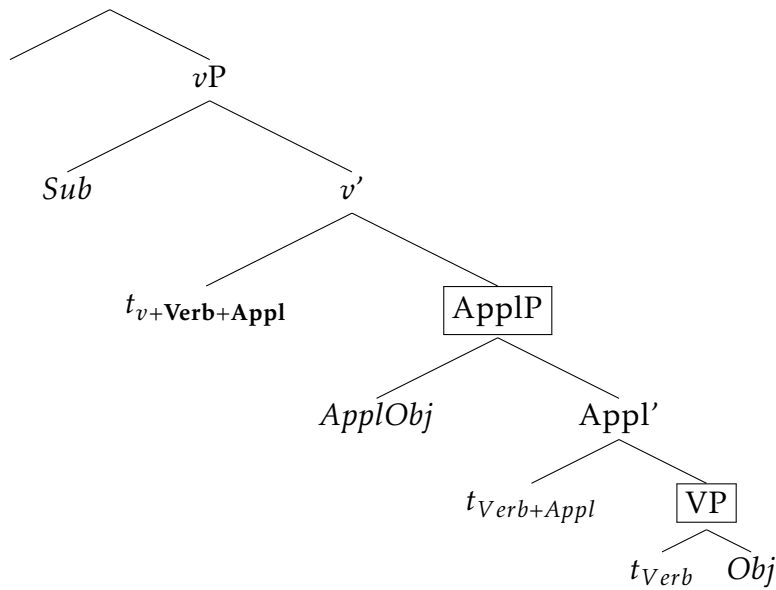
The structure of the applicative

The structure in (237) presents an analysis of Niuean’s applicative following the general structure that Pylkkänen (2002) proposes for high applicatives, where ApplP merges above VP (see also Marantz 1993).¹⁴ According to the locality condition of head movement (Travis 1984, Matushansky 2006), a head on the move cannot pass over an intervening head. As such, V^0 -raises to Appl⁰, which results in the attested morpheme order internal to the verbal complex (V-*aki*), as well as the attested argument order (Inst-DO).

- (236) Fakaugauga aki e ia e pelu e fua loku.
 cut APPL ERG 3.SG ABS bushknife ABS fruit pawpaw.
 ‘He cut the pawpaw with his bush knife.’ (Sperlich 1997:66)

¹⁴I am following Massam (2006, 2010), who describes Niuean’s applicative construction as a high applicative.

(237) Applicative



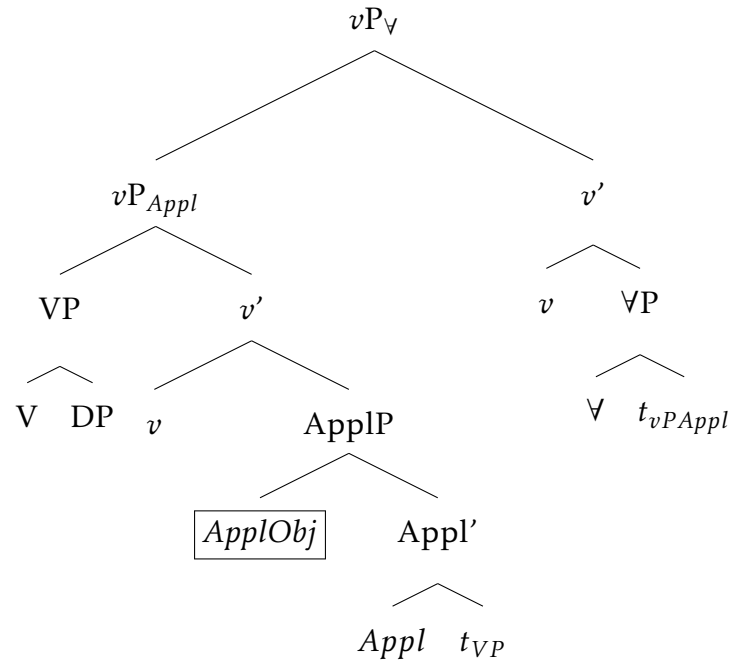
Surface order: Verb—APPL

Scope order: APPL > Verb

As shown in (237), the inverse order of the verb and the applicative head can be accounted for in the context of V^0 -raising.

As compared to the roll-up analysis, the V^0 -raising analysis also offers a more straightforward account of the licensing of the instrumental object. In the V^0 -raising analysis, the instrumental object (*ApplObj* in the tree above) is generated in the specifier of the projection headed by *aki*. This would be more difficult in the context of a VP roll-up analysis, where the evacuation of the instrument would need to be stipulated, lest it be predicted to surface internal to the verbal complex. This complication is shown in (238), where *aki* introduces the applicative object (shown in a box).

(238) Roll-up movement and *aki*



If, instead, the instrumental object were generated in a position external to the verbal complex (Massam 2010, 2013), the VP roll-up analysis would have to stipulate the relative order of the instrumental object and the direct object. In contrast, the attested order of the instrumental object and direct object is a natural consequence of the V^0 -raising analysis.

Postverbal particle *oti* ‘all’

The particle *oti* ‘all’ surfaces internal to the verbal complex.¹⁵ From this position it can scope over external arguments, as in (1a), and internal arguments, such as direct objects, as in (1b) and instrumental arguments, as in (1c).

- (239) a. Moua oti e lautolu e kato
find all ERG 3PL ABS basket
‘They all found the basket.’
- b. Moua oti he tama e tau kato.
find all ERG child ABS PL basket
‘The child found all the baskets.’
- c. To tā oti e ia e fale aki e tau mena gahua nā.
FUT build all ERG 3.SG ABS building with ABS PL thing work DEM
‘He’s going to build the house with all those tools.’ (Seiter 1980:251)

While *oti* ‘all’ can scope over both internal and external arguments, if both an internal and external arguments are plural, the subject interpretation is preferred:

- (240) Moua oti e lautolu e tau kato
find all ERG 3PL ABS PL basket
‘They all found the baskets.’
‘They found all the baskets.’

¹⁵This section focuses on constructions in which *oti* is part of the verbal complex; however *oti* can also surface within a particular nominal phrase. Compare (1a) to (1b), which may be an example of a reduced relative clause:

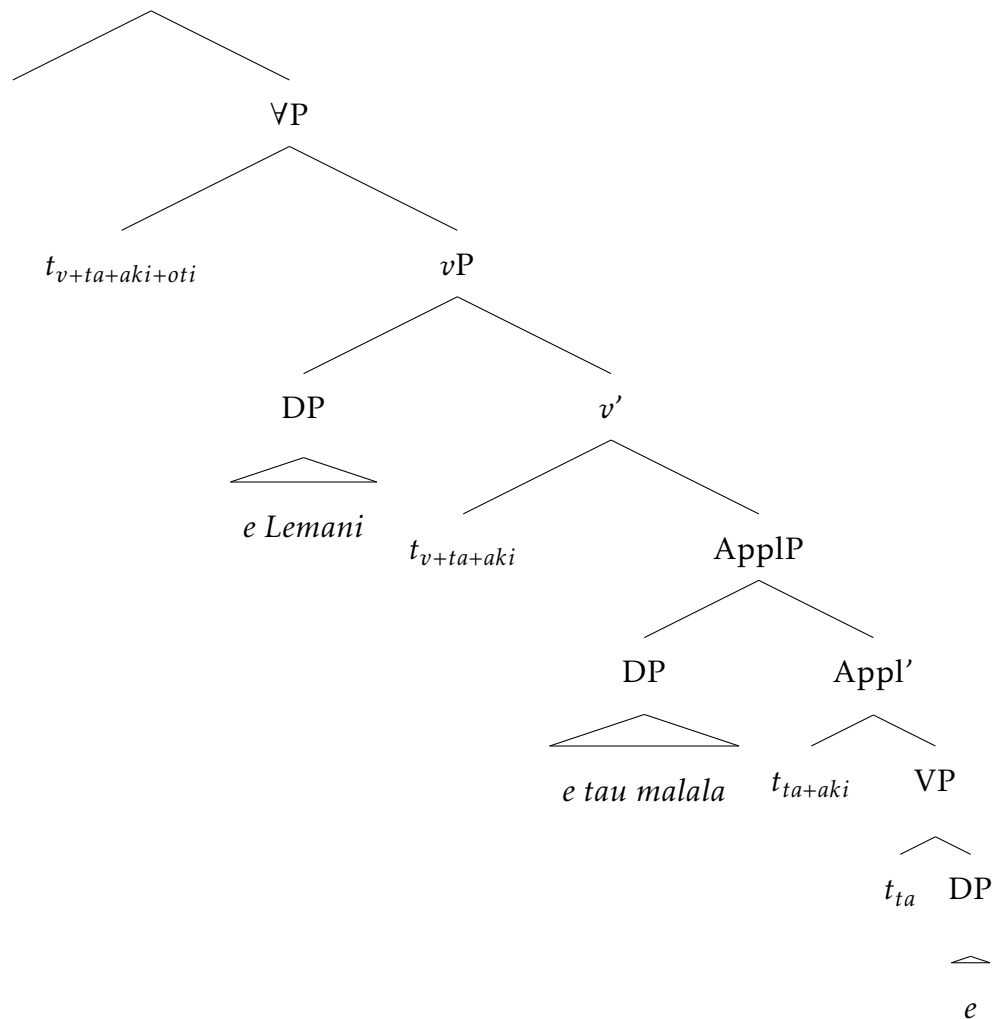
- (1) a. Malona oti nakai e tau kapinio mitaki haau?
ruined all INTERR ABS PL dishes good poss
‘Are your good dishes all ruined?’ (Seiter 1980:66)
- b. Malona nakai e tau kapinio mitaki oti haau?
ruined INTERR ABS PL dishes good all poss
‘Are all your good dishes ruined?’ (Seiter 1980:66)

The only way for an oblique argument to fall under the scope of *oti* is for *oti* to modify that argument directly (see (235) above).

The fact that *oti* can scope over external arguments can be captured by generating *oti* relatively high in the verb phrase.

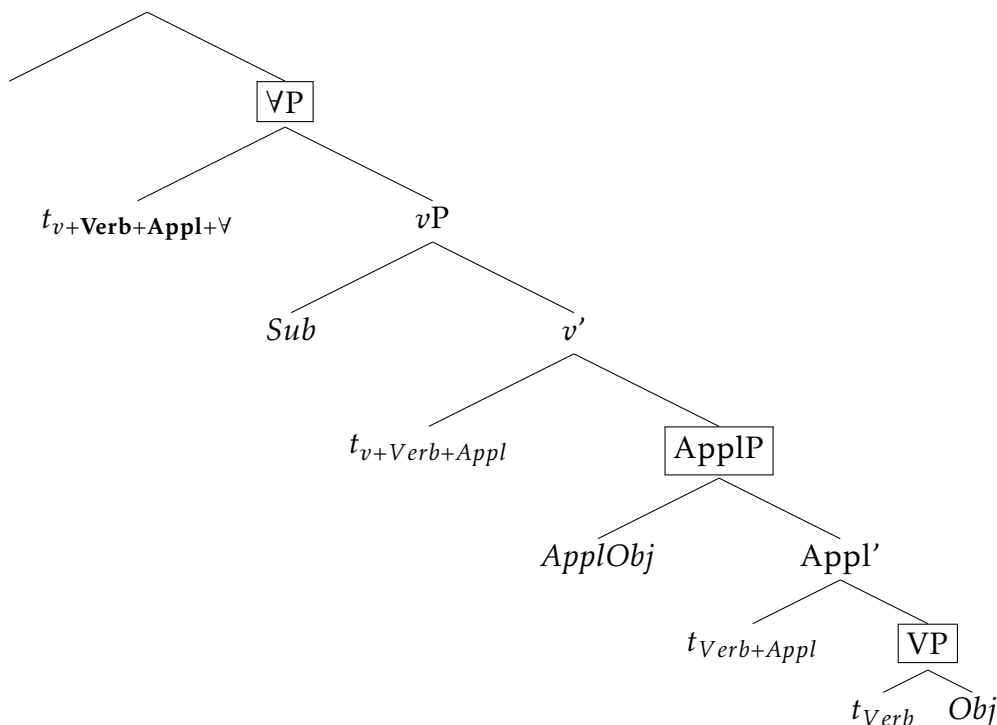
The order of elements internal to the verb phrase supports the idea that *oti* is generated relatively high. *Oti* takes a more peripheral position relative to the applicative head when *oti* ‘all’ and *aki* cooccur, as illustrated by the example and tree structure in (241).

- (241) Maeke e fakatino_i ke tā aki oti e Lemani e tau malala e_i.
possible ABS picture DEP.T draw WITH all ERG Lemani ABS PL charcoal
‘It’s possible Lemani drew the picture with all the charcoals’ (Seiter 1983:332)



The tree in (241b) is represented more abstractly in (242) in order to highlight that it is possible to account for the inverse order of the main verb, the applicative head, and the particle *oti* ‘all’ in the context of V^0 -raising.

(242) *Aki* and *oti*



Surface order: Verb—APPL— \forall

Scope order: \forall > APPL > Verb

As shown in (242), V^0 -raising can account for the inverse order of the verb, the applicative *aki*, and *oti* ‘all.’ Furthermore, the V^0 -raising analysis can generate *oti* above the external argument, which captures the fact that *oti* can scope over the external argument. In contrast, the VP roll-up movement analysis cannot generate *oti* above the external argument without implicating the external argument in roll-up movement.

In conclusion, this section has demonstrated that an X^0 -raising analysis can account for differences between postverbal particles with regard to their relationship with verbal arguments. The applicative *aki* licenses instrumental objects, whereas *oti* ‘all,’ can take scope over any of the core arguments of the verb, i.e., subjects, direct objects and instrumental objects. Thus, *aki* is generated below the external argument, while *oti* ‘all,’ is generated above the external argument, if there is one. Finally, the manner and directional predicates do not interact with individual arguments at all, but instead form a

compound with the main verb.

5.4.4 Inverse order and X-raising: TAM projections

This section demonstrates how an X^0 -raising analysis captures the inverse order of two additional postverbal elements, shown underlined in (243).

(243) Inverse scope of postverbal particles

- a. Surface order: MAN/DIR—APPL—V—ASP Adv—PFV
- b. Scope order: PFV > ASP Adv > V > APPL > MAN/DIR

Perfective marker *tuai*

The perfective marker *tuai* is the only TAM particle that does not surface in clause-initial position. It occurs most commonly in clauses that also contain the clause-initial perfective marker *kua*, as in (244a); however, both *kua* (244b) and *tuai* (244c) can appear alone.

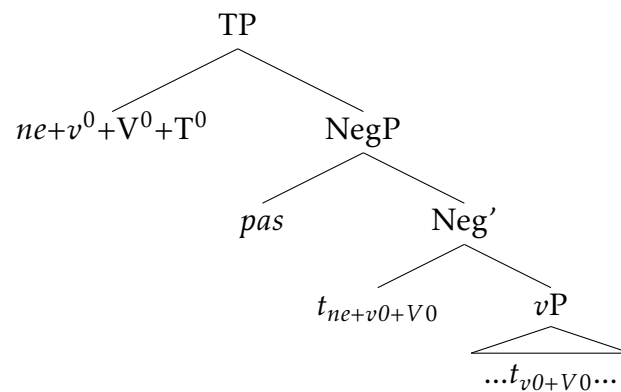
- (244) a. Kua tele oti tuai e lautolu a au.
PFV kick all PFV ERG 3.PL ABS 1.SG
'They've all kicked me.' (Seiter 1980: 66).
- b. Kua fanogonogo a au ke he tau hūhū oti haau.
PFV listen ABS 1SG GL LOC PL questions all GEN.2SG
'I've already listened to all of your questions.' (Seiter 1980: 8)
- c. Moua tuai e au.
find PFV ERG 1SG
'I've found it.' (Haia 2010: 263)

The Niuean perfective markers are reminiscent of negation in Standard French, where two negative markers flank the verb:

- (245) Béatrice (ne) joue pas avec le chat.
Beatrice NEG play NEG with DEF cat
'Beatrice doesn't play with the cat.'

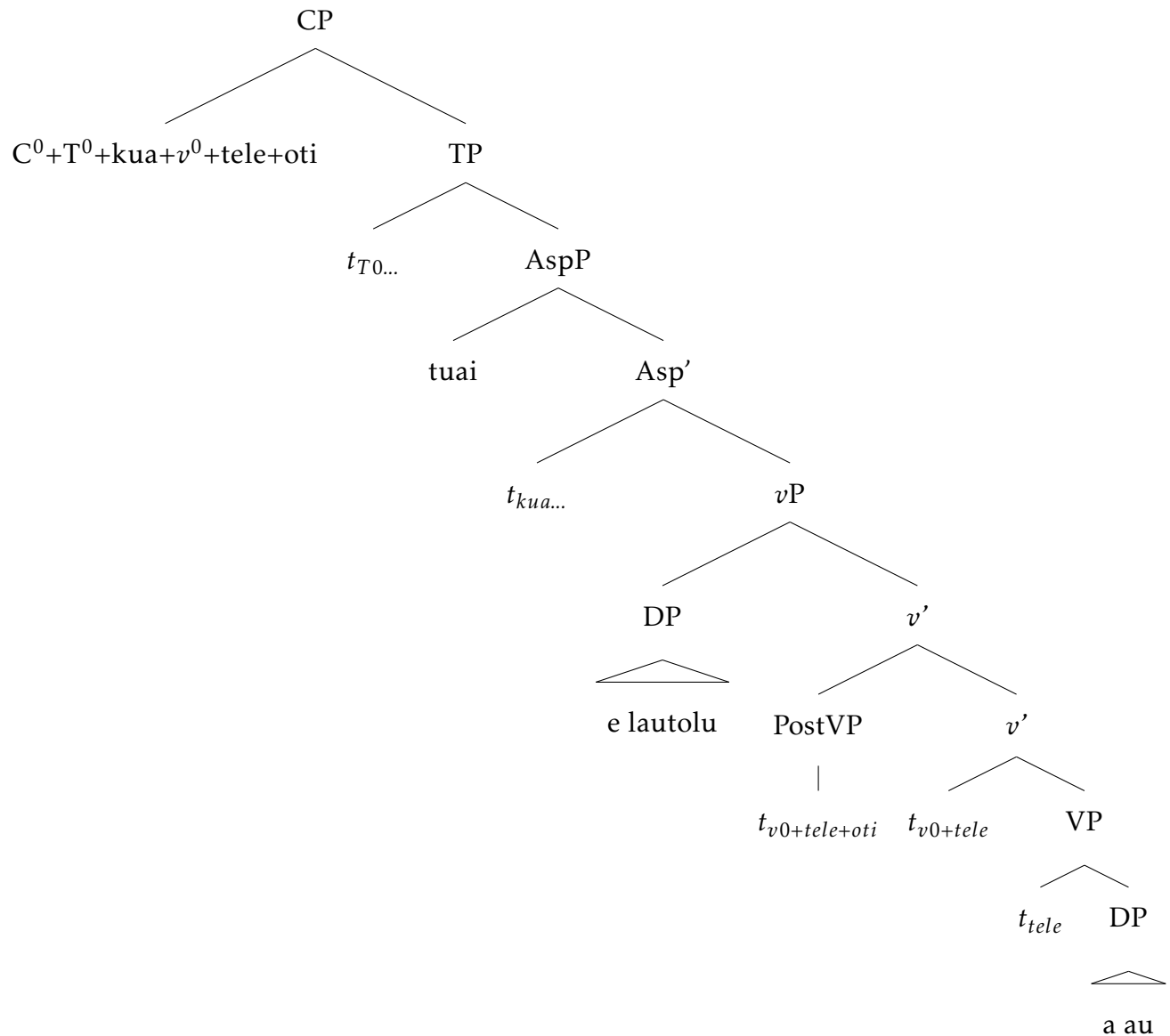
According to a classic analysis of French negation, *ne* and *pas* (Pollock 1989), *ne* alternates with a null head in Neg⁰. The negative marker *pas* is generated in the specifier of NegP. The verb surfaces between these two markers, because it moves out of its base position, right-adjoins to *ne* (or \emptyset), and forms the complex head *ne+v+Verb*. Subsequently, the complex head adjoins to the next available head, which results in *pas* being oriented to the right of the verb, as shown in (246).

(246) French *ne...pas*



Adopting a similar analysis for the disjoint Niuean perfective makers *kua* and *tuai* captures the peculiar surface position of *tuai*, while allowing both perfective markers to be generated in a single projection associated with aspect, located in a standard position below TP. The *kua...tuai* adaptation of the *ne...pas* analysis is illustrated in (247).

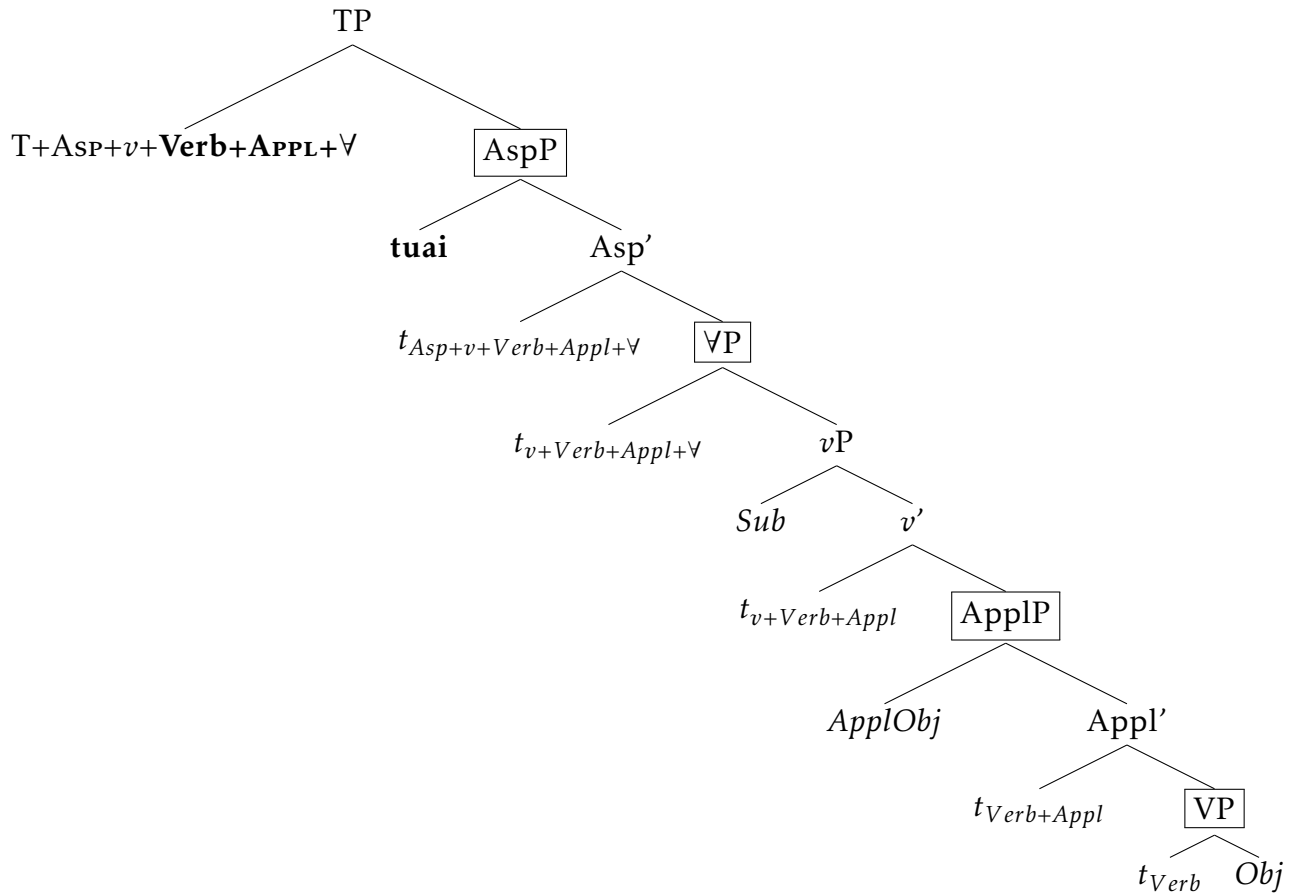
(247) Kua tele oti tuai e lautolu a au.
 PFV kick all PFV ERG 3.PL ABS 1.SG
 ‘They’ve all kicked me.’ (Seiter 1980: 66).



Thus, *tele* ‘kick,’ *oti* ‘all,’ and *tuai* *pfv* are generated in an order that reflects their relative scope. The fact that they surface in the opposite order of their scope is the result of the complex predicate *tele* ‘kick’ + *oti* ‘all’ moving above *tuai*.

More abstractly, the structure in (248) indicates how the V^0 -raising analysis accounts for the inverse order of the verb, the applicative head, *oti* ‘all,’ and the postverbal perfective marker.

(248) *Aki, oti, and tuai*



Surface order: Verb—APPL—V—PFV

Scope order: PFV > V > APPL > Verb

Aspectual/temporal adverbs

Using a similar to strategy to the one developed for *tuai*, it is also possible to account for the inverse order of aspectual/temporal adverbs. This small group of postverbal items includes *agaia* ‘still’ (249a), *tūmau* ‘always, constantly’ (249b), and *agataha* ‘immediately.’

- (249) a. Kua fā mafuti mai agaia nī e mamahi he haana a manava.
 PFV HAB feel DIR still EMPH ABS pain LOC POSS LK stomach
 ‘(She) can still feel the pain in her stomach.’ (Sperlich 1997: 91)

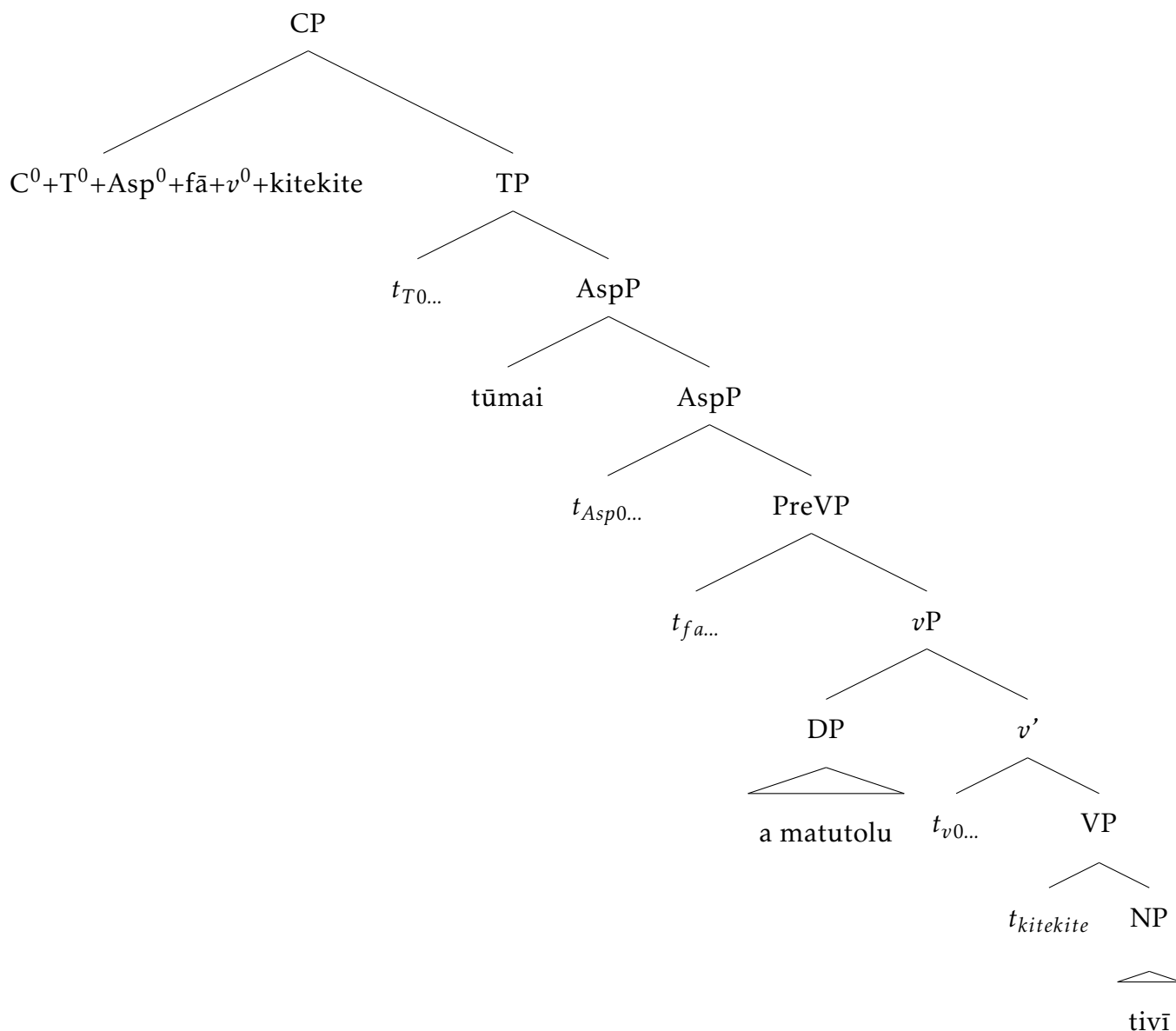
- b. Fā kitekite tivī tūmau a matutolu.
 HAB watch TV always ABS 2PL.EX
 ‘We always watch TV together.’ (Haia 2010: 126)

Many of the pre- and postverbal particles discussed in this chapter can function as the main verb of a clause. As such, they are particularly amenable to a complex predicate analysis. Aspectual/temporal adverbs, on the other hand, are not related to verbs, and are instead treated as adjuncts. Note that it is difficult to determine whether these adverbs are adjoined to AspP or TP, because adjunction in either location would result in the attested word order, i.e., following the predicate and preceding the postverbal perfective marker *tuai*, as well as the attested scope, e.g., aspectual/temporal adverb > manner and directional predicates > main predicate.

A more thorough investigation of emphatic particles and the locative/temporal pronoun *ai* may prove useful in determining the exact location of aspectual/temporal adverbs. For now, I assume they are adjoined to AspP.

The tree in (250) represents the structure of (249b), which is an example of PNI. As such, the NP object is shown in its θ -position, because this chapter assumes that the syntax of PNI and VSO clauses is the same (see Chapter 4).

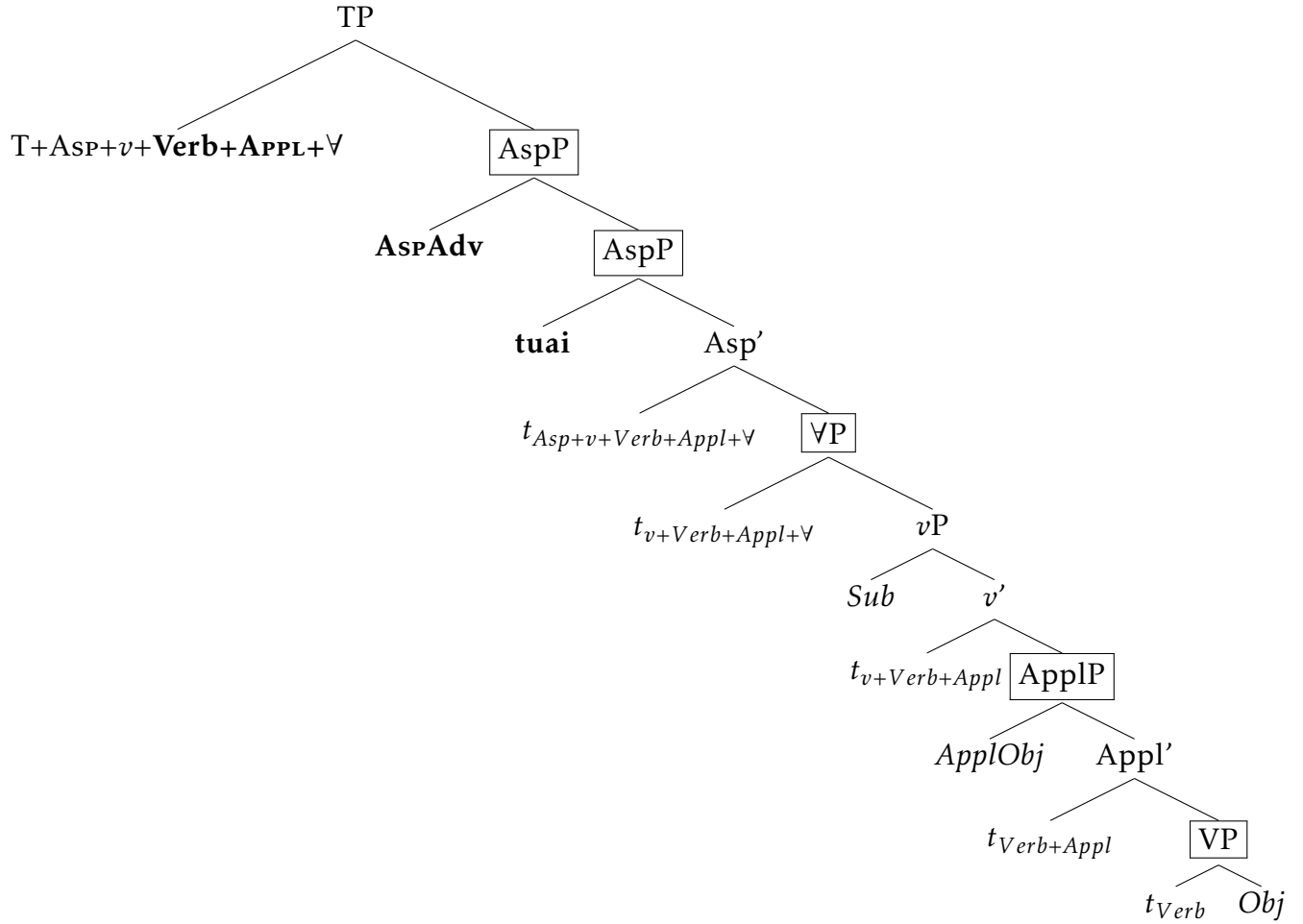
(250) Derivation of (249b)



In (250), inverse order is achieved by generating *kitekite* ‘watch’ and *tūmai* ‘always’ in a way that represents their eventual scope. The linear order results from the predicate *fā kitekite* ‘habitually watch’ moving to C⁰, which is higher than the position of the adverb.

Finally, the structure in (251) illustrates how the V⁰-raising analysis accounts for the inverse order of each component of the verbal complex discussed in this chapter: the verb, the applicative head, the postverbal particle *oti* ‘all,’ and the postverbal perfective marker.

(251) *Aki, oti, tuai*, aspectual adverb



Surface order: Verb—APPL—V—ASPAdv—PFV

Scope order: ASPAdv/PFV > V > APPL > Verb

This section has demonstrated that it is possible to achieve inverse scope without roll-up movement. The uniform X^0 -raising analysis of postverbal particles requires less vacuous structure than the XP-raising analysis and generates postverbal particles in syntactic positions that fit their semantic identities to a greater extent than the XP-raising analysis can. Finally, the V^0 -raising analysis eliminates the need to evacuate objects from a moved-VP. The next section addresses negation in Niuean, which remains a puzzle for both the uniform X^0 -raising and X^0 /XP-raising analyses.

5.5 Negation

In the absence of a systematic study of Niuean negation, one of two assumptions is made about the negation strategy used in declarative verbal clauses. Either the negative marker *nākai* is assumed to be a negative auxiliary verb that merges with an affirmative predicate (Polinsky 1995; Veselinova 2014), or *nākai* is considered to be a nonverbal particle situated above TP and below CP (Massam 2000; 2009b). More specifically, Massam (2009b) places *nākai* in the specifier of NegP.

This section provides evidence in favor of a negative verb analysis for *nākai* and explains how the negative verb analysis challenges the X^0/XP -raising analyses. First, the Māori and Tongan patterns of standard negation are discussed, because they provide transparent examples of negative verbs. Second, it is argued that the negative element *fakaai* has been misclassified as a raising predicate. Instead, the complex verb *nākai fakaai* is the raising predicate. Because *fakaai* modifies *nākai*, it stands to reason that *nākai* is verbal. Finally, an analysis of standard negation is presented that treats *nākai* as a functional restructuring verb, similar to *liga* ‘likely,’ *teitei* ‘nearly,’ etc.

5.5.1 Negation data

The negative marker surfaces before the verb and after TAM markers (252):

- (252) Kua nākai gahua mitaki e tau hokohoko he tino haana.
PFV NEG work MAN ABS PL nerves GEN body POSS
‘His nerves are not functioning well.’ (Sperlich 1997: 123)

In clause-initial position, *nākai* is optionally realized as *ai*:

- (253) Nākai/ai manako a au ke he vala povi.
NEG like ABS 1SG LOC GL beef
‘I do not like beef.’

Distributional differences between *nākai* and *ai* have not been systematically investigated; however, speakers report that *ai* is a contracted form of *nākai* (Seiter 1980, Sperlich

1997). For the remainder of this section, only examples with *nākai* are provided. However, where *ai* could replace *nākai*, i.e., where negation is clause-initial, doing so does not change the interpretation or grammaticality of the sentence. Therefore, *nākai* and *ai* are probably phonologically conditioned allomorphs of a single negative head.

The negative marker must be generated higher than the final landing site of the verb. The most obvious alternative, that the negative marker is a lexically specified prefix, is untenable, because the different types of particles can surface between *nākai* and the verb. In (254-255), *lā* ‘just/yet,’ and the perfective marker *tuai*, are shown in postverbal and post-negation position.

- (254) a. Mai lā taha vala vai tote.
give just NSP piece water little
‘Give me some water!’ (Seiter 1980:21)
- b. Kua motua tuai e futi ka e nākai lā hio ia e moamoa.
PERF mature PERF ABS banana but LK NEG yet cut PASS ABS end
‘The banana has matured but the end has not been cut off yet.’
(Sperlich 1997:225)
- (255) a. Moua tuai e au.
find PFV ERG 1SG
‘I’ve found it.’ (Haia 2010: 263)
- b. Kua nākai tuai liu e tahi.
PERF NEG PERF turn ABS sea
‘The tide has not turned.’ (Seiter 1980:26)

Not only can particles related to aspect surface between negation and the main verb, but so can the non-neutral interrogative *kia*, as shown in (256):

- (256) a. Tokotoko agaia kia e fuakau he fano?
cane still INTERR ABS old.man in go
‘Does the old man still walk with a cane.’ (Seiter 1980:25)
- b. Nākai kia kitia e koe e lā tokoluga?
NEG INTERR see ERG 2.SG ABS sun high
‘Didn’t you see the sun high?’ (Seiter 1980:26)

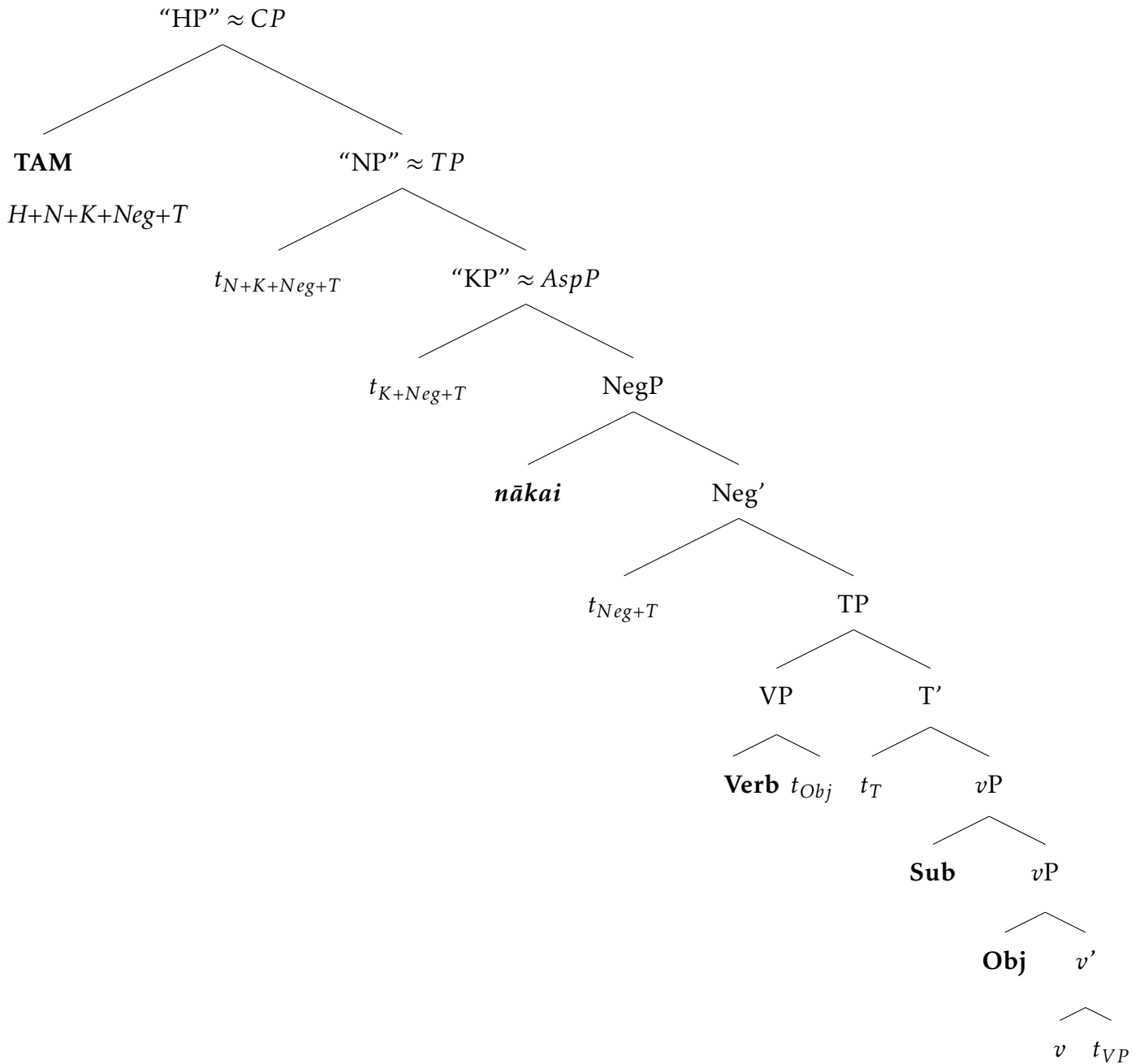
Finally, this section will also consider structures negated by *nakai fakaai* (257). In isolation, *nakai fakaai* is translated into English ‘never.’ In a clausal context, *nakai fakaai* embeds a dependent clause headed by *ke*. In anticipation of the conclusions reached at the conclusion of this section, *fakaai* is glossed as a negative manner predicate.

- (257) a. Nākai fakaai au ke ō mo koe.
 NEG NEG.MAN 1.SG DEP.T go COMTV 2.SG
 ‘I would never go with you.’ (Sperlich 1997:45)
- b. Nākai fakaai taha ke age ha mena ki a ia.
 NEG NEG.MAN NSP DEP.T give NSP thing LOC ABS 3.SG
 ‘No one at all gave him anything.’ (Tregear and Smith 1907: 29)

5.5.2 X/XP-raising analysis of Negation

The status of standard negation is particularly important to the X^0/XP -raising analysis of Niuean, because it is incompatible with a verbal approach. In the X^0/XP -raising account, the predicate undergoes phrasal movement to the specifier of TP and T^0 undergoes head movement to the highest projection of the extended CP. If *nākai* were verbal, it would be the head of its phrase, and hence the Head Movement Constraint (Travis 1984) would dictate that T^0 collect *nākai* as it moved up the clausal spine. Instead, Massam (2009b) reasons that *nākai* is located in the specifier of NegP, where it is not implicated in X^0 -movement. The X^0/XP -raising account with negation is illustrated in (258).

(258) VSO via X^0 /XP-raising with negation



Next, I will consider the evidence for and against an analysis of Niuean negation that treats *nākai* as a verbal head. Contra Massam (2000, 2009b), a negative verb approach is ultimately chosen for two reasons. First, while the verbal analysis is less obvious for Niuean than it is for, e.g., closely related Māori and Tongan, the Niuean data is nonethe-

less most compatible with this approach. Second, it unites the analyses of the standard negative marker *nākai* and the negative raising predicate *nākai fakaai*.

5.5.3 Standard negation in Māori and Tongan

Since Hohepa (1969) and Biggs (1969), the most common analysis of standard negation in Māori is that it comprises a negative verb that embeds an affirmative clause, resulting in a bi-clausal structure (see also Bauer 1981, 1993; Chung 1970, 1978; Waite 1987).

Māori expresses standard negation with the stative verb *hore*, which combines with TAM markers to yield the following forms: *kaaore*, *kaahore*, and *kaare*. Māori employs other TAM marker + negative stative verb combinations when negating nonverbal clauses and imperatives. An example affirmative and negative pair are provided in (259).

(259) Māori standard negation

- a. I te whakarongo a Hera.
T/A listen PERS Hera
‘Hera was listening.’
- b. Kaahore a Hera i te whakarongo.
T/A.NEG PERS Hera T/A listen
‘Hera was not listening.’ (Bauer 1993: 140)

Māori is also a V1 language, and while it does have SVO clauses (or ‘apparent’ SVO clauses, see Chapter 2), definite subjects, such as *a Hera* in (259b), do not appear in clause initial position without the topic marker *ko* (Bauer 1993: 89). Therefore, the fact that *a Hera* precedes the embedded verb *whakarongo* ‘listen,’ means that it has raised into the subject position of the higher predicate. Note that the experiencer of the affirmative verb *a Hera* surfaces in the subject position of the negative verb.

While negative verbs such as *hore* are raising verbs, raising is not obligatory (260):

(260) Māori negation without raising

Kaaore e tipu te hua whenua ki reira.

T/A.NEG T/A grow the fruit land to there

‘Vegetables will not grow there.’ (Bauer 1993: 141)

Tongan’s behavior with respect to standard negation is similar to the one found in Māori, with an important difference. Whereas, standard negation in Māori is always expressed by a negative raising verb that embeds an affirmative clause, standard negation in Tongan is expressed either by a negative verb that embeds an affirmative clause headed by the subjunctive *ke*, as in (261b), or by a negative auxiliary verb that embeds only a predicate and its arguments, as in (262b) (Ball 2008).

(261) Tongan negation with subjunctive *ke*

a. Na’e kei kata ’a e ongo ki’i ta’ahiné.

PST still laugh ABS DET DU CL girl.DEF

‘The two little girls were still laughing.’ (Broschart 1999: 97)

b. Na’e ’ikai ke kata ’a Pita.

PST NEG SUB laugh ABS Pita

‘Pita did not laugh.’ (*lit.*: ‘It was not that Pita laughed.’) (Broschart 1999: 104)

(262) Tongan negation without subjunctive *ke*

a. Na’e tō ’e Sione ’a e manioke.

PST plant ERG Sione ABS DET cassava

‘Sione planted the cassava.’

b. Na’e ’ikai tō ’e Sione ’a e manioke.

PST NEG plant ERG Sione ABS DET cassava

‘Sione didn’t plant the cassava.’ (Ball 2008: 46)

In both (261b) and (262b), *’ikai* is preceded by a T/A marker; but in (261b), the complement of *’ikai* is preceded by the clause’s second T/A marker. Therefore, the structure in (261b) more transparently consists of two predicates than (262b). Ball (2008) concludes that the difference between (261b) and (262b) is a matter of subcategorization. We

would interpret to mean that *'ikai* is a verbal head that selects either an AspP or vP. There is no mitigating reason to adopt the more cumbersome alternative, that *'ikai* heads a verbal projection in (261b), but is a nonverbal modificational element in (262b).

5.5.4 *Nākai fakaai*

Niuean has a negative raising structure (see examples below) where a negative verb merges with a projection that is higher than the maximal verb phrase, as in Māori (259b) and some instances of negation in Tongan (261b). In Niuean, like Tongan, that projection is headed by the dependent tense marker *ke*, which is glossed subjunctive for Tongan.

For Tongan, it is assumed that a single head alternatively embeds a subjunctive phrase or a maximal verb phrase (Broschart 1999; Ball 2008). This section argues that Niuean *nākai* also subcategorizes for either TP or vP. Examples of the Niuean negative raising structure are given below:

- (263) a. *Nākai fakaai au ke ō mo koe.*
 NEG NEG.MAN 1.SG SUB go COMTV 2.SG
 'I would never go with you.' (Sperlich 1997:45)
- b. **Nākai au ke ō mo koe.*
 NEG 1.SG SUB go COMTV 2.SG
 Intended: 'I would not/never go with you.'
- c. **Fakaai au ke ō mo koe.*
 NEG.MAN 1.SG SUB go COMTV 2.SG
 Intended: 'I would not/never go with you.'
- (264) a. *Nākai fakaai taha ke age ha mena ki a ia.*
 NEG NEG.MAN NSP SUB give NSP thing LOC ABS 3.SG
 'No one at all gave him anything.' (Tregear and Smith 1907: 29)
- b. **Nākai taha ke age ha mena ki a ia.*
 NEG NSP SUB give NSP thing LOC ABS 3.SG
 Intended: 'No one (at all) gave him anything.'

- c. *Fakaai taha ke age ha mena ki a ia.
 NEG.MAN NSP SUB give NSP thing LOC ABS 3.SG
 Intended: ‘No one (at all) gave him anything.’

Note that neither *nākai* nor *fakaai* can function as a raising predicate independently, as indicated by the ungrammaticality of (263b-c) and (264b-c). Thus, the question is whether it is possible to say that *nākai* modifies *fakaai* or vice versa.

The modificational element may or may not be a predicate in its own right, but the modified element *must* be, because (263a) and (264a) are raising constructions, and as such, are biclausal. Massam (2000) reasons that *nākai* is non-verbal, in part, because it only embeds the maximal verb phrase and its complements. But, if *fakaai* modifies *nākai*, then *nākai* must also be able to select TP.

Seiter (1980:157) claims that *fakaai* is a raising verb. However, Sperlich (1997:45) refers to *fakaai* as an ‘intensifier’ and says that ‘it is used with *ai* or *nakāi* to form an intensive negative.’ Tregear and Smith (1907:29) describe *fakaai* as an ‘intensitive to *ai* and *nākai*.’ In support of the idea that *fakaai* modifies *nākai*, as an interjection, *nākai* means ‘no,’ while *nākai fakaai* means something stronger, e.g., ‘never,’ or ‘decidedly not.’ *Nākai* can also be modified by the particle *lā* ‘just/yet’ to mean ‘not yet.’ Comparable examples with *fakaai* do not exist.

Another reason to suspect that *fakaai* modifies *nākai* in the raising construction is that *fakaai* shares basic morphosyntactic characteristics with Niuean’s ‘manner adverbs,’ which follow the matrix predicate and often consist of a verbal root and the causative prefix *faka*. An example with *fakaeneene* ‘carefully’ is given in (265):

- (265) Ne tunu faka-ene-ene e au e tau talo.
 PST COOK CAUS-INSERT-REDUP ERG 1SG ABS PL taro
 ‘I carefully cooked the taro.’ (Seiter 1980:17)

Recall from Section 5.4.2 that manner and directional ‘adverbs’ are actually verbal heads that form complex predicates with the main verb of the clause. Thus, *fakaai* could be

construed as a predicate composed of the causative prefix *faka* and the negative root *ai* that forms a complex predicate with the negative verb *nākai*. This type of analysis easily captures the fact that *nākai fakaai* is not just negative, but emphatically so. The alternative analysis, where *fakaai* is the main verb and *nākai* is a negative particle or auxiliary, has the strange implication that Niuean has negative concord only in this oddly limited context.

Thus, there is reason to suspect that *nākai* is a verb. Similar verbal strategies are employed in sentential negation in closely related languages: in Māori, a negative verb embeds an affirmative clause; and in Tongan, a negative verb embeds either a subjunctive clause or a maximal verb phrase. Because *nākai* is the main verb of Niuean's negative raising structure, like Tongan *'ikai*, the complement of standard negation in Niuean can also be said to consist of a subjunctive clause or a maximal verb phrase.

Massam (2002, 2009b) gives two arguments against a verbal analysis of *nākai*. The first, that the complement of *nākai* is only ever a verb phrase, was just disputed on the basis of the complementation options of *nākai* when modified by *fakaai*. The second observation that Massam cites as evidence against a verbal analysis is that *nākai* does not appear with a wide range of postverbal particles. However, the fact that *nākai* hosts any postverbal particles is noteworthy.

Recall from (254-256) that the emphatic particle *lā* 'just/yet,' the postverbal perfective marker *tuai*, and the nonneutral interrogative marker *kia* surface after the verb in an affirmative clause, but after negation in a negative clause. Further more, if *fakaai* does, in fact, modify *nakai* in the negative raising structure, then the types of postverbal particles *nakai* appears with includes a so-called 'manner adverb.'

Why other emphatic markers, predicates, interrogative particles, etc., cannot combine with *nākai* is a lingering question. In the future, a solution to this question may be found by appealing to the notion of polarity. It is well attested cross-linguistically that certain lexical items are restricted to either positive or negative environments. Perhaps it is the case that the majority of postverbal particles in Niuean are positive polarity items, which

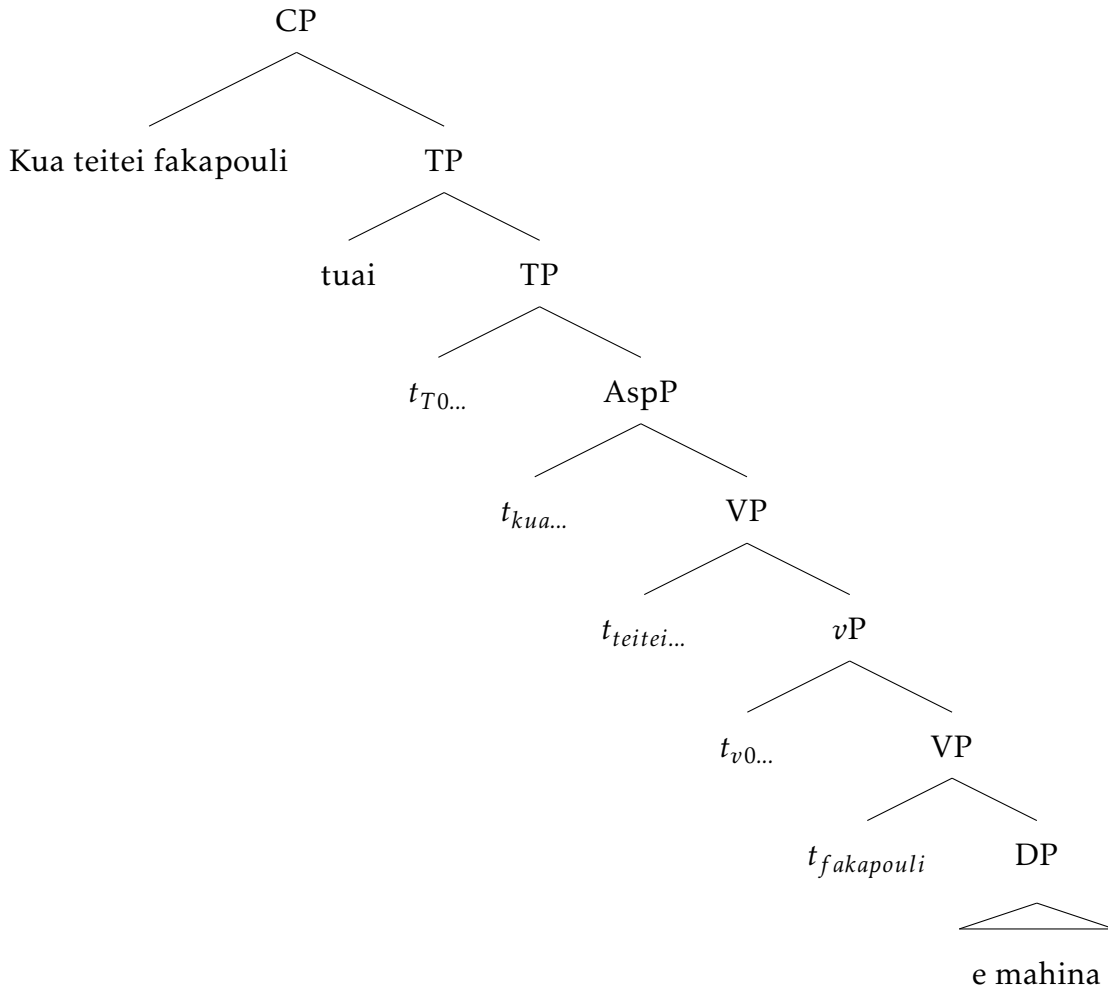
means that they are only licensed in an affirmative context.

In conclusion, while negation in Niuean deserves more in depth consideration, there is good reason to believe that *nakai* is a verbal element. Section 5.5.2 discussed why a verbal analysis of negation is problematic for the X^0 /XP-raising analysis; the next subsection proposes a negative verb analysis of *nākai* that is consistent with uniform X^0 -raising.

5.5.5 Restructuring analysis of *nākai*

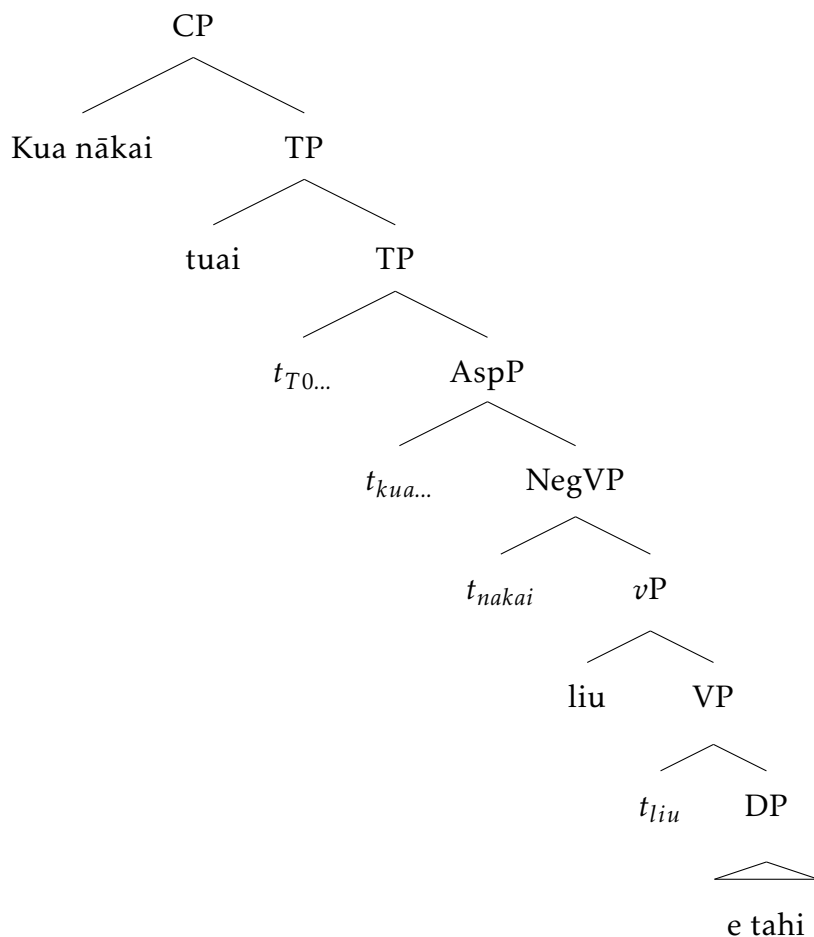
Recall that Niuean has a class of predicates that function as both restructuring and raising predicates depending on the context. The verb *teitei* ‘nearly’ is one example; it was classified as a functional restructuring verb, in part, because of its lack of argument-sharing properties (Massam 2013). The analysis that was proposed for functional restructuring verbs is illustrated below (266). Note that the *teitei* ‘nearly’ merges with a vP . The lower predicate, *fakapouli* ‘darken’ in this example, raises to *teitei* on its way to C^0 . This accounts for the location of *tuai*, which surfaces after the second verb.

- (266) Kua teitei fakapouli tuai e mahina.
PFV nearly darken PFV ABS moon
‘The moon has nearly darkened.’ (Seiter 1980:14)



On the one hand, a functional restructuring analysis is appropriate for negative *nākai*, because it is verbal but non- θ -assigning. On the other hand, *nākai* differs from other functional restructuring predicates with regard to the fact that certain postverbal elements can intervene between *nākai* and the lower verb. This fact can be accounted for by adopting the restructuring analysis illustrated in (266b) with the modification that the lower verb is not attracted to the negative verb. Instead, the negative verb moves through Asp^0 and T^0 to C^0 on its own. As (267) illustrates, this can account for the fact that certain particles can intervene between *nākai* and the main verb.

- (267) Kua nākai tuai liu e tahi .
 PERF NEG PERF turn ABS sea
 ‘The tide has not turned.’ (Seiter 1980:26)



This solution solves one problem and introduces a second. The main verb in (267) is intransitive. However, when a transitive verb falls under the scope of negation, this analysis incorrectly predicts the word order to surface as TAM-Neg-S-V-O, because if V^0 stops at v^0 , it is not in a position that will result in its surfacing before the transitive subject, generated in spec,v .

The solution to this problem may be found in the structure of nonverbal predicates: nonverbal predicates are introduced by overt predicate heads; it stands to reason that verbal predicates are introduced by a null Pred^0 .

Nominal and locative predicates in Niuean are headed by *ko* and *hā(hā)*, respectively.¹⁶

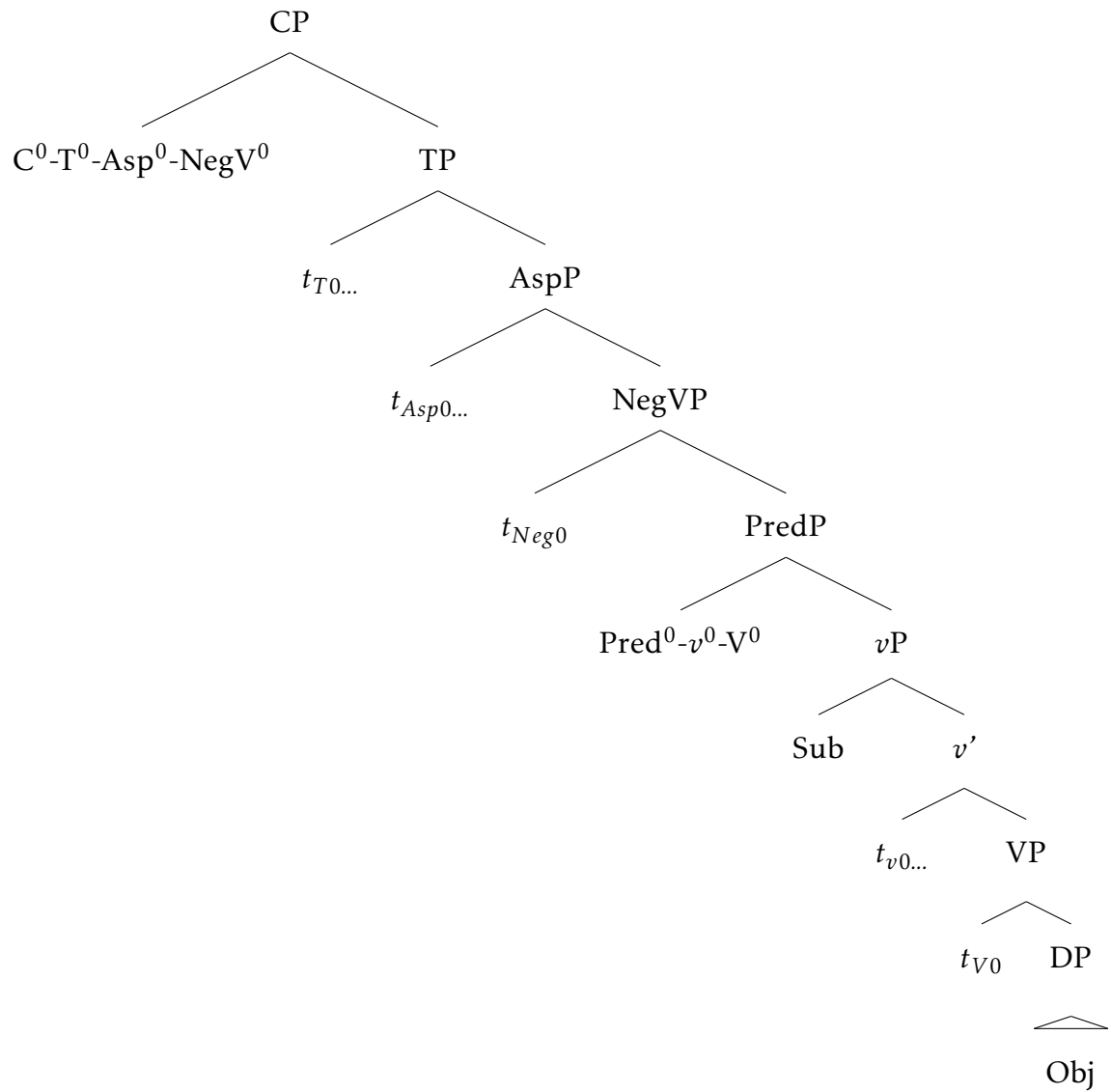
Examples are given in (268) and (269).

- (268) a. *Ko e ekekafo a ia.*
 PRED.NOM ABS doctor ABS 3SG
 ‘He was a doctor.’ (Seiter 1980:54)
- b. *Nākai ko e vagahau tohi e vagahau Niue.*
 NEG PRED.NOM ABS language write ABS language Niue
 ‘The Niuean language is not a written language.’ (Sperlich 1997:xv)
- (269) a. *Hāhā i loto he fale e kau kaihā.*
 PRED.LOC in inside GEN house ABS group thief
 ‘A group of thieves was inside the house.’ (Seiter 1980:55)
- b. *Nākai hāhā he taane e tonuhia ke puipui haana hoana.*
 NEG PRED.LOC GL man ABS right DEP.T defend poss wife
 ‘The husband did not have the right to defend his wife.’
 (Massam, Lee, and Rolle 2006:7)

Examples (268b) and (269b) demonstrate that *nākai* can combine directly with nominal and locative predicates. If verbal predicates were also headed by Pred^0 , then presumably V^0 would move to v^0 and finally to Pred^0 , where it would be in a position to precede the subject, even in negative examples where the verb does not move to Neg^0 . The basic idea is illustrated in (270):

¹⁶There is a relatively large literature on the nature of *ko* in Polynesian and many different analyses. Perhaps the two most common analyses are i) that *ko* is a predicate head (Seiter 1980; Baker 2003), which is adopted here and ii) that *ko* is a preposition (Massam et al. 2006).

(270)



The introduction of a null Pred^0 into verbal predicate structure is a tentative solution to the problem of word order and *nākai*'s status as a negative verb. Future work will have to determine whether null Pred^0 is part of all verbal predicates in Niuean, or whether PredP is inserted in the context of *nākai* as a last resort to satisfy selectional requirements of the latter.

5.6 Conclusion

This chapter presented a novel analysis based on X^0 -raising for a number of different predicate structures in Niuean, including restructuring predicates, applicatives, and compound verbs. Uniform X^0 -raising, as compared to mixed X^0 /XP-raising, streamlined the functional structure associated with TAM and the formation of complex predicates. A second advantage of the X^0 -raising analysis was its ability to account for the inverse scope of postverbal particles, while avoiding the problem of object evacuation that roll-up movement faces. The primary justification for the complexities that XP-raising imposes on Niuean clause structure stems from pseudo noun incorporation. However, once a prosodic account of PNI is adopted, an X^0 -raising analysis becomes available, which is preferable on independent grounds.

Chapter 6

Possible extension to Chol

Before concluding the dissertation, I would like to make a few comments about VSO/VOS alternations in Chol. As observed by Coon (2010), VSO/VOS alternations in Chol and Niuean have a lot in common; the key features are summarized in (271). On account of these similarities and the general success of Massam (2000, 2001), Coon (2010) develops a VP/VP-remnant raising analysis for Chol, which is discussed in Section 6.1.

- (271)
- a. Objects without overt material in D^0 can only occur in VOS clauses
 - b. Objects in VOS clauses can be modified
 - c. Temporal adverbs can surface before DP objects
 - d. Temporal adverbs must surface *after* objects in VOS clauses

In light of the similarities between Chol and Niuean, one might also wonder whether a prosodically-motivated account of Chol VOS is warranted. Of course, if ARGUMENT- φ triggered the prosodic grammar to displace the object into a position where it would be possible to phrase it with the verb, then the verb and the object in VOS clauses should be phrased in a common φ -phrase. Unfortunately, no data on the prosody of Chol VOS is available. Nonetheless, I will briefly explore a few reasons why it may be a good idea to revisit Chol V1 in the context of ARGUMENT- φ .

6.1 VP-raising account Chol V1

Although Chol is predominantly a VOS language, the nature of VOS/VSO alternations in Chol (Coon 2010) is extremely similar to the one found in Niuean. If the object phrase contains any overt functional material in D^0 or higher, the clause must be VSO, as illustrated by the data in (272).

(272) Chol VSO

- a. Tyi i-kuch-u- \emptyset aj-Maria jiñi si'.
PFV 3SG.ERG-carry-SS-3SG.ABS DET-Maria DET wood
'Maria carried wood.'
- b. *Tyi i-kuch-u- \emptyset jiñi si' aj-Maria.
PFV 3SG.ERG-carry-SS-3SG.ABS DET wood DET-Maria
Intended: 'Maria carried wood.' (Coon 2010: 355)

In contrast, if the object is not preceded by any functional material in D^0 or higher, the required word order is VOS, as shown in (273). Thus, Chol is predominantly a VOS language, because most objects do not have any overt material in D^0 .

(273) Chol VOS

- a. Tyi i-kuch-u- \emptyset si' aj-Maria.
PFV 3SG.ERG-carry-SS-3SG.ABS wood DET-Maria
'Maria carried wood.'
- b. *Tyi i-kuch-u- \emptyset aj-Maria si'.
PFV 3SG.ERG-carry-SS-3SG.ABS DET-Maria wood
Intended: 'Maria carried wood.' (Coon 2010: 355)

Note that VOS clauses in Chol, like Niuean, are not instances of head incorporation. This is indicated by the fact that the object in a VOS clause can be modified, as in (274):

(274) Modified object in Chol VOS

Tyi i-mǎñ-ǎ-∅ pejtylel tyumuty jiñi alob.
 PFV 3SG.ERG-buy-ss-3SG.ABS all egg DET boy
 ‘The boy bought all the eggs.’ (Coon 2010: 360)

Chol has one other noteworthy similarity to Niuean: temporal adverbs can intervene between the verb and a DP object (275a), but they cannot intervene between the verb and an NP object (275b). The placement of these adverbs is consistent with an analysis that treats the verb and the object as a surface constituent in VOS clauses.

(275) Location of adverbs in Chol VOS

- a. Tyi k-wuts’-u-∅ abi ili pisil.
 PFV 1SG.ERG-carry-ss-3SG.ABS yesterday DET clothes
 ‘I washed these clothes yesterday.’
- b. *Tyi k-wuts’-u-∅ abi pisil.
 PFV 1SG.ERG-carry-ss-3SG.ABS yesterday clothes
 Intended: ‘I washed clothes yesterday.’
- c. Tyi k-wuts’-u-∅ pisil abi.
 PFV 1SG.ERG-carry-ss-3SG.ABS clothes yesterday
 ‘I washed clothes yesterday.’ (Coon 2010: 367)

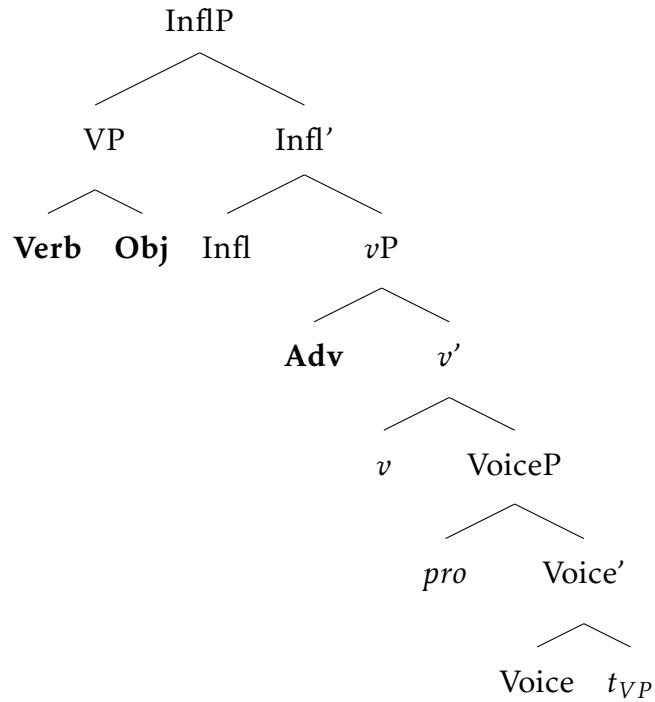
Coon (2010) proposes a VP-raising analysis of Chol V1 to account for these facts. First, consider the VOS clause: the object is VP-internal when the VP raises to spec,Infl.¹ This correctly predicts the attested order of the major constituents as well as the fact that the adverb surfaces to the right of the object in VOS clauses. The structure of Chol VOS is schematized in (276a). Like Massam’s (2001) analysis of Niuean VSO clauses, DP objects

¹In Coon (2010), it is *vP*, not *VP*, that is said to front. Here, I am representing Chol clause structure as it is presented in Coon, et al. (2013), with the addition of the movement operation from Coon (2010).

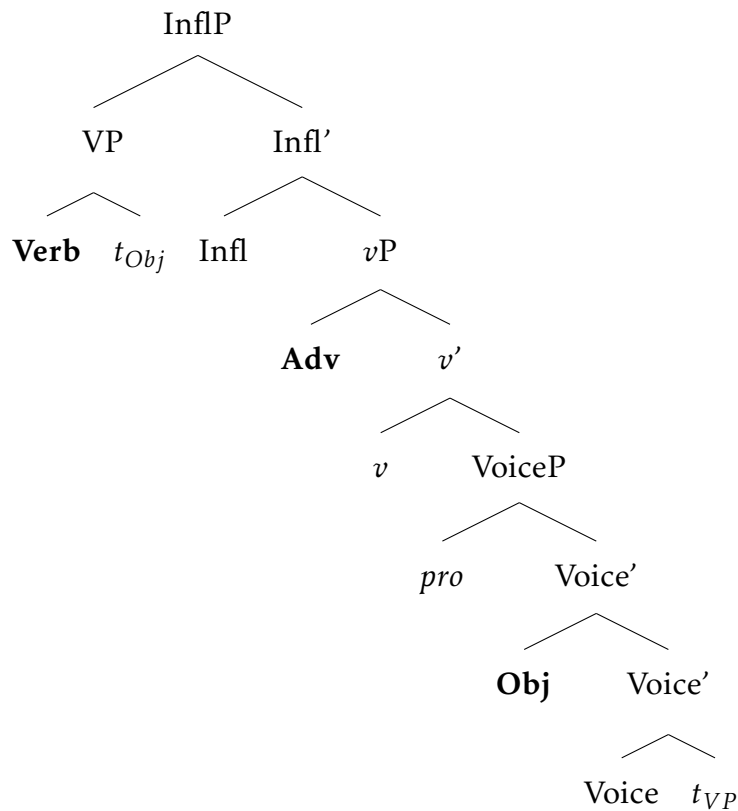
A second discrepancy between (276b) and Coon (2010), is that in (276b), the object moves into spec,*v*, while in Coon (2010), the object moves to spec,Abs. However, in order to discuss Coon (2010) and Coon et al. (2013) in tandem, I am not including AbsP, here. The only purpose AbsP serves in Coon’s (2010) analysis is to host objects that evacuate the VP; AbsP is not involved in the assignment of absolutive case.

move into a VP-external position, before the VP raises. This also predicts the attested word order. The VP-remnant derivation of Chol VSO is schematized in (276b).

(276) a. Chol VOS (Coon 2010)



b. Chol VSO (Coon 2010)



As Coon (2010) observes, Chol is strikingly similar to Niuean with respect to VSO/VOS alternations and the placement of high adverbs. However, there is one important difference between these languages: for Chol, both VSO and VOS clauses display transitive case assignment (note the presence of the ergative marker in all previous examples). Therefore, the fact that DP objects evacuate the VP while NP objects remain in situ cannot be motivated on the basis of case as it was for Niuean (Massam 2001).

Justification for object evacuation is a weak point of Coon's (2010) analysis. While she draws a connection between the movement of DP objects into VP-external positions in Chol to the phenomenon of 'object shift' in Germanic, the movement is not explicitly motivated. Furthermore, unlike object shift in Germanic, Chol object shift cannot be related to specificity or definiteness, as bare NPs objects can receive these interpretations in Chol (Coon 2010).

The next section evaluates the VP-raising account of Chol V1 in light of Coon et al. (2013)’s explanation for why one group of Mayan languages display syntactic ergativity, while the other group, which includes Chol, does not.

6.2 Phase-based analysis of syntactic ergativity

In the context of the Mayan language family, Coon et al. (2013) develop an account of syntactic ergativity, an extraction asymmetry found in some morphologically ergative languages, based on the locus of absolutive case assignment. They take as their jumping off point Tada’s (1993) generalization that syntactically ergative languages are “high absolutive” languages, in which the absolutive marker affixes to the clause-initial T/A marker; while languages without the extraction asymmetry are “low absolutive” languages, in which the absolutive marker surfaces as a verbal suffix.

The correlation is exemplified by Q’anjob’al, on one hand, and Chol, on the other. Q’anjob’al is a syntactically ergative, high absolutive language. In (277a-b), absolutive arguments are shown to relativize with a gap in Q’anjob’al, whereas the ungrammaticality of (277c) indicates that this strategy is unavailable to ergative arguments.²

(277) Q’anjob’al relativization

- a. Max- \emptyset jay ix ix_i [max- \emptyset h-el-a’ _____i].
 PFV-3.ABS arrive DET woman PFV-3.ABS 2.ERG-see-TV
 ‘The woman who you saw arrived.’
- b. Max- \emptyset jay ix ix_i [max- \emptyset way _____i].
 PFV-3.ABS arrive DET woman PFV-3.ABS sleep
 ‘The woman who slept arrived.’

²In syntactically ergative Mayan languages, A’-constructions based on transitive subjects, surface in a special “agent focus” construction (see, e.g. Stiebels 2006; Coon et al. 2013). The unique properties of agent focus constructions include i) an agent focus suffix that attaches to the verb root and ii) transitive semantics with intransitive morphology, both in terms of valency morphology and case (i.e., no ergative agreement).

- c. *Max- \emptyset jay ix ix_i [max-ach y-il-a' _____i].
 PFV-3.ABS arrive DET woman PFV-2.ABS 2.ERG-see-TV

Intended: 'The woman who saw you arrived.' (Clemens et al. to appear: 20)

Chol is a low absolutive language, and it does not display an extraction asymmetry. In (278a-c), absolutive and ergative arguments are shown to relativize with a gap in Chol.

(278) Chol relativization

- a. Ta' jul-i- \emptyset jiñi x'ixik_i [ta'-bä aw-il-ä- \emptyset _____i].
 PFV arrive-ITV-3.ABS DET woman PFV-REL 2.ERG-see-TV-3.ABS

'The woman who you saw arrived.'

- b. Ta' jul-i- \emptyset jiñi x'ixik_i [ta'-bä wäy-i- \emptyset _____i].
 PFV arrive-ITV-3.ABS DET woman PFV-REL sleep-ITV-3.ABS

'The woman who slept arrived.'

- c. Ta' jul-i- \emptyset jiñi x'ixik_i [ta'-bä y-il-ä-yety _____i].
 PFV arrive-ITV-3.ABS DET woman PFV-REL 3.ERG-see-TV-2.ABS

'The woman who saw you arrived.' (Clemens et al. to appear: 18)

Lest there be any skepticism about the correlation of these two features, 15 languages display the pattern exemplified by Qanjob'al, and 7 languages display the pattern exemplified by Chol. Only two languages, Ixil and Yukatek are potential exceptions to the rule (Tada 1993; Stiebels 2006; Coon et al. 2013).³

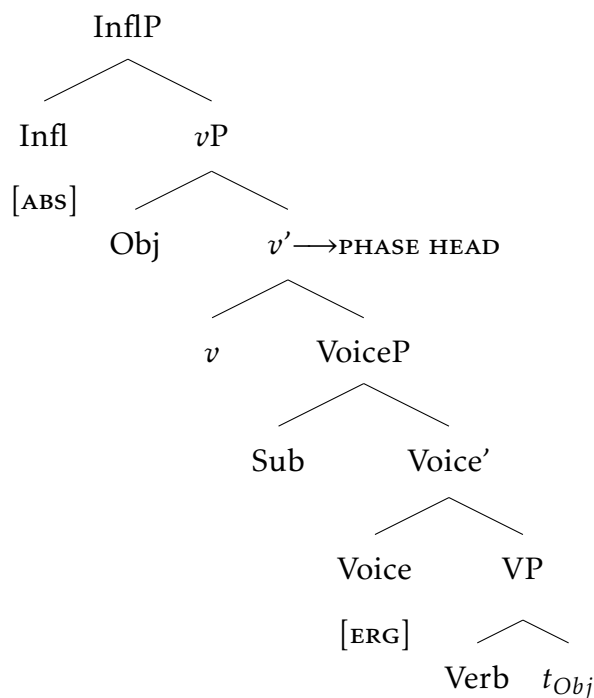
Coon et al. (2013) adopt the perspective that morphologically ergative languages vary in the locus of absolutive case assignment (Alridge 2004, 2008; Legate 2002, 2008). They argue that both types are represented in the Mayan family: in Q'anjob'al and other "high absolutive" languages, the locus of absolutive case is Infl⁰; and in Chol and other "low absolutive" languages, absolutive case is assigned by Voice⁰. Evidence to support this

³In general, the syntactically ergative, high absolutive languages are spoken in Guatemala, while the low absolutive languages are spoken in Mexico. This begs the question of whether the co-occurrence of syntactic ergativity and absolutive case on T/A are the consequence of language contact as opposed to grammatical generalization. However, if syntactic ergativity and absolutive case on T/A were merely areal features, one would not expect the two properties to correlate so well; there is no *a priori* reason why a language might not adopt one feature but not the other.

analysis comes from the fact that absolutive objects are banned from nonfinite clauses in high absolutive languages, because, by hypothesis, there is no case-assigning Infl^0 in nonfinite clauses. However, absolutive objects occur in the very same context in low absolutive languages.

Transitive case assignment is schematized in (279) for Q'anjob'al. Note that the transitive object moves into a local configuration with Infl^0 in order to check case.

(279) Q'anjob'al transitive case assignment (Coon et al. 2013)

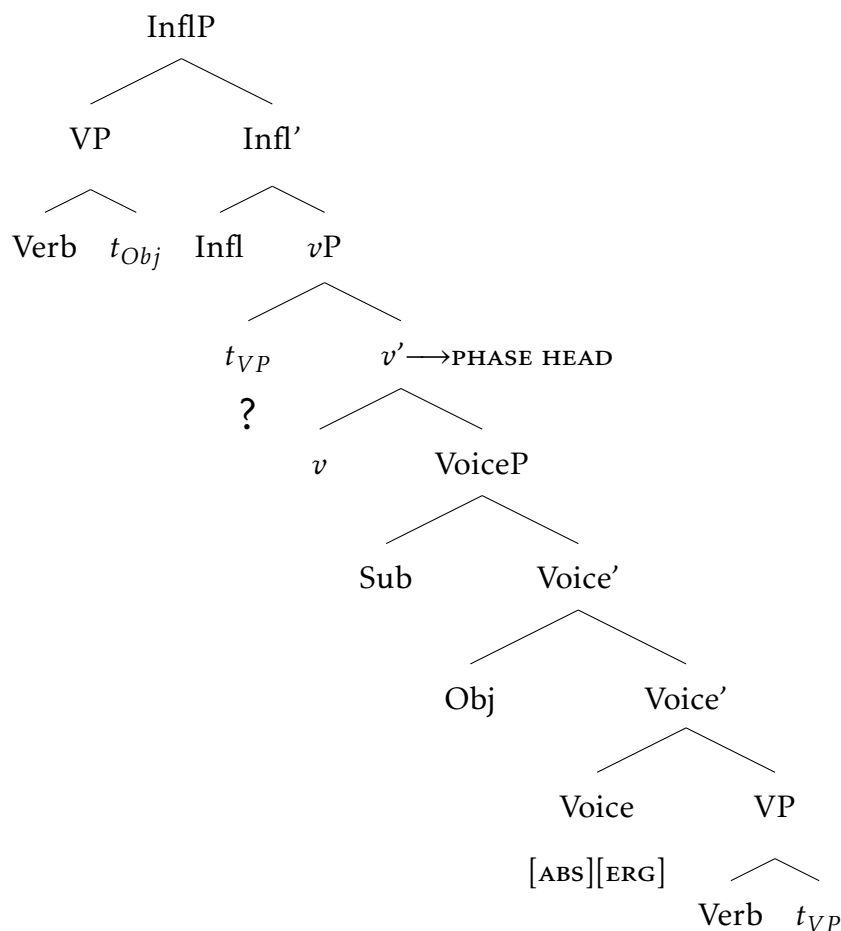


The fact that the transitive object moves to Infl^0 in order to check case plays a crucial roll in explaining why ergative subjects do not freely extract in syntactically ergative languages. Coon et al. (2013) conjecture that the phase introduced by v^0 projects only one specifier position, which means that there is only one way out of the phase. Once the object moves into spec,v for case-checking purposes, no other vP internal elements can move through the phase. Thus, high absolutive languages are syntactically ergative, because the absolutive argument blocks the ergative argument from moving out of vP .

This also predicts that no high absolutive languages derive V1 via VP-fronting. Just as

the absolutive DP in spec,*v* traps the ergative DP in situ, the VP would also be trapped in situ. For Chol, the absolutive DP receives case from Voice⁰, which means that the phase edge is available for VP-raising. However, because the phase edge is occupied by the VP, it would be impossible to also extract any arguments, as shown in (280):

(280) Chol VP-raising revisited ⁴



In sum, Coon et al.'s (2013) account of syntactic ergativity is incompatible with a VP-fronting account of Mayan word order for high absolutive languages. In theory, low absolutive languages could be derived via VP-fronting, but only in case these languages did not have true A'-movement. While theoretically possible, there is no evidence to suggest that this should be so; and the standard accounts of *wh*-questions, relative clauses, etc., are movement-based in these languages.

⁴Coon et al. (2013) do not actually show DP objects evacuating the VP in this way; however, 'object shift' (Coon 2010), is consistent with their analysis.

6.3 Applying ARGUMENT- φ to Chol

If future work were to reveal that the verb and the object form a prosodic constituent in Chol VOS clauses, an analysis based on head movement and ARGUMENT- φ should be considered as a replacement to the VP-raising account of VOS. Even if the Mayan vP only has one specifier position through which a phrasal element can move out of the vP phase (Coon et al. 2013), the verbal head (V^0+v^0) should not be precluded from moving to Infl^0 .

Coon (2010) hypothesizes that there is a general restriction on head movement in Chol based on parallels between the verbal and nominal domains. However, just as an analysis with head movement plus ARGUMENT- φ can replace VP-raising in the verbal domain, there is no reason this approach could not also be applied to the nominal domain. In fact, the analysis predicts that similar patterns *should* be found in the nominal domain, as ARGUMENT- φ is articulated in terms of head-argument pairs, not verb-object pairs.

The data in (275) showed that a high adverb can surface between a verb and a DP object, but not between a verb and an NP object. This suggests that the verb and the NP object form a constituent. Since NP objects can only occur in VOS clauses (273), the verb and the object can be said to form a constituent in VOS clauses. V^0 -raising alone cannot account for this fact: if Chol base-generated SVO and derived V1 via V^0 -raising, the result would be VSO. If VOS were subsequently derived via, e.g., scrambling, as has been proposed for Tagalog, then the verb and the object would not be predicted to form a surface syntactic constituent,⁵ which means that there is no obvious reason why a high adverb could not surface between them.

In contrast, the surface constituency of the verb and the object in VOS clauses could be accounted for by deriving Chol VOS in the same way this thesis derives Niuean VOS: by i) base-generating SVO, ii) deriving V1 via V^0 -raising, and iii) reordering the relative

⁵Even in the event that VOS were derived via V^0 -raising and scrambling, the verb and the object could still form a prosodic constituent for any number of reasons, e.g. a language specific need to satisfy the cross-linguistic preference for binary prosodic constituents.

position of the object and subject on prosodic grounds. Furthermore, based on the cyclic assignment of prosodic structure, the Niuean approach develops an explanation for why NP objects, but not DP objects, surface next to the verb; and it is more precisely constrained than the object shift explanation offered by Coon (2010). Thus, in conclusion, an ARGUMENT- φ -based analysis has the potential to explain the same phenomena that the VP-raising analysis does in addition to being compatible with Coon et al.'s (2013) account of syntactic ergativity in Mayan.

Chapter 7

Conclusion

This thesis began with a critical review of different approaches to the derivation of V1 order that both evaluated the theoretical contributions and explored the empirical predictions of different V1 analyses. The bulk of the data came from languages in the Austronesian and Mayan families. The diversity represented in these families is substantial enough to support the conclusion that there is more than one way a language becomes V1, especially in light of the fact that there is word order variation across V1 languages. Some V1 languages are predominantly VSO, some are predominantly VOS, and some are balanced VSO/VOS. Yet, the linguistic diversity does not support the variety of syntactic analyses represented in the V1 literature, which include V^0 -raising, VP-raising, specifier parameterization, ternary branching, non-configurationality, and subject-lowering.

One strategy for culling the number of syntactic approaches to deriving V1 is to explore the syntax-prosody interface for solutions to the problem of word order variation across V1 languages. One might be concerned that this strategy has the potential to hide the problem of gratuitous analytic variation in a different module of the grammar. However, if a prosodic explanation for word order variation is well-founded, then the underlying principle will manifest in different multiple environments as well. A good example comes from Bennett et al. (to appear a, b) who account for postverbal word order varia-

tion in Irish with a prosodic constraint *STRONG START*, which they show to be active in a number of different environments in Irish.

Thus, prosodic solutions to problems of word order variation should be supported by primary prosodic data. Unfortunately this sort of data is lacking for many languages, but especially for V1 languages, which are generally understudied. One contribution of this dissertation is to provide an initial investigation into sentence-level prosody in Niuean. A controlled reading-based study revealed that Niuean clauses are produced with a series of H*L-tunes correlating to φ -phrases. The H* for each φ -phrase is located on the rightmost prosodic word (PWd) of the phrase and is anchored to the stressed syllable. Thus, a H* tone can serve as a diagnostic for the right edge of Niuean φ -phrases.

Once established, the φ -phrase diagnostic was used to investigate the prosodic phrasing of three types of PNI constructions: absolutive, middle, and instrumental. Based on data from pitch maxima, it was determined that for each of the three PNI constructions under investigation, the verb and incorporated argument form a unique φ -phrase. This finding was further supported by evidence from phrase-final lengthening. It was also observed that tense-aspect-mood (TAM) markers form a prosodic word with the verb. This finding is consistent with the head movement analysis of Niuean V1, developed later in the thesis on independent grounds.

Massam's (2000, 2001) syntactic account of PNI was evaluated in light of the prosodic findings and in accordance with the tenets of Match Theory (Selkirk 2011). In the syntactic account of PNI, the incorporated argument is invariably an NP generated as sister to V^0 , even when the incorporated argument is a middle or instrumental argument. Thus, each type of PNI construction is said to contain a syntactic constituent of the form [_{VP} Verb [_{NP} Noun]] irrespective of the thematic role of the incorporated argument. The fact that the verb and the incorporated argument form a prosodic constituent in each type of PNI construction is consistent with Massam's (2000, 2001) syntactic analysis. However, this finding is also consistent with a prosodic account of Niuean PNI, where the verb and

the incorporated argument are phrased together for specifically prosodic reasons.

The second half of the thesis develops a novel account of Niuean V1 and VSO/VOS alternations based on i) a V^0 -raising account of Niuean clause structure and ii) a prosodic account of Niuean PNI. As the V^0 -raising account of Niuean V1 is developed, it is compared to the prevailing VP-raising account (Massam 2000, 2001, et seq.). According to the VP-raising analysis, VP moves to spec,T in order to satisfy T^0 's EPP-pred feature. In order to predict the attested order of TAM, the verb, and the negative marker, the EPP-bearing T^0 is perpetually null, despite the fact that Niuean has overt tense particles. Consequently, the VP-raising analysis must generate all TAM markers in an extended CP projection. In contrast, the X^0 -raising analysis maintains a non-exceptional functional structure, $CP > TP > AspP > vP$. As a result, it becomes possible to i) adopt a cross-linguistically attested structure for functional and semi-functional restructuring predicates and ii) apply a negative verb analysis to standard negation in Niuean, for which there is independent evidence.

Postverbal particles in Niuean surface in the inverse order of their scope, prompting Rackowski and Travis (2000) and Massam (2010, 2013) to propose a VP roll-up analysis for structures with postverbal particles. However, this introduces the problem of object evacuation in the derivation of VSO. This thesis demonstrated that it is possible to account for Niuean's inverse scope in the context of X^0 -raising, which solves the problem of object evacuation. Furthermore, in the context of X^0 -raising it is uniquely possible to i) differentiate between the postverbal applicative head and the particle *oti* 'all' with respect to the position of different arguments and ii) generate postverbal particles in syntactic projections that fit their semantic identities, e.g., generating the postverbal perfective marker *tuai* in AspP.

The V^0 -raising analysis of Niuean V1 has a number of benefits over the VP-raising analysis; however, a V^0 -raising account is incompatible with a syntactic approach to PNI. Crucially, a prosodic account of PNI is compatible with a V^0 -raising analysis. This the-

sis presented a novel analysis of PNI based on the prosodic well-formedness condition ARGUMENT- φ , which was in turn based on Selkirk's (1984) insight that prosodically optimal structures phrase head-argument pairs together. Selkirk's proposal, the *Sense Unit Condition*, was semantically defined, and therefore difficult to reconcile with a Y-model of the grammar. Subsequently, her idea has resurfaced in a number of proposals based on surface constituency. However, in the case of Niuean PNI, surface constituency is not useful to PF, because the verb moves into clause-initial position over the course of the syntactic derivation. The thesis solved the problem by allowing the prosodic grammar to make reference to non-adjacent head-argument pairs with categorical feature sharing.

When the prosodic grammar finds two heads with matching category features, it must assign them to the same φ -phrase. This means that NP objects move into a position that is adjacent to the verb at the point when prosodic structure is assigned. DP objects are not repositioned in the same way NP objects are, because a DP object is not transferred to PF in the same cycle as the verb. Once a constituent receives prosodic structure, syntactic features are no longer visible. By the time the verb spells out, the DP object has already received prosodic structure. Hence, PF can no longer see that the verb and the object were in the sort of head-argument relationship that must be phrased together.

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